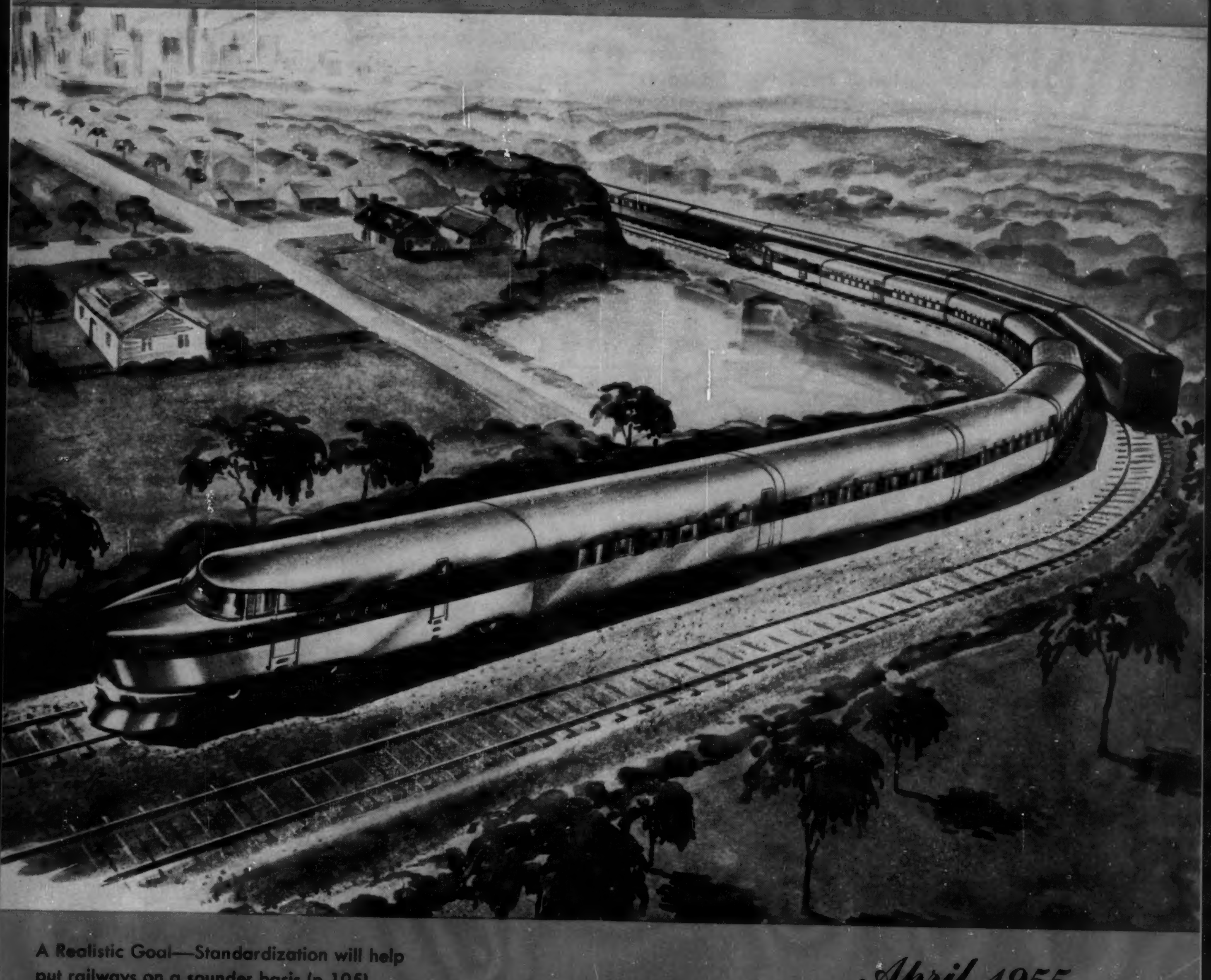
The Magazine of STANDARDS



A Realistic Goal—Standardization will help put railways on a sounder basis (p 105)

April 1955

The Magazine of
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Formerly Standardization

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MARGINAL NOTES

Salute to ASME—

The seventy-fifth anniversary that the American Society of Mechanical Engineers is celebrating this year (page 101) is a milestone from which the Society can look back with pride on its achievements. Among its accomplishments are many in the standardization field. One of special concern to the American Standards Association was the result of ASME's cooperation with four other technical societies some 37 years ago in organizing a standards coordinating committee. That committee is now, of course, the American Standards Association.

ASME is one of the most active supporters of standardization, both at the national and international level. As sponsor of sectional committees on mechanical subjects, ASME is bringing the USA viewpoint to American-British-Canadian conferences on "ABC" standards this month.

The American Standards Association takes pleasure in saluting the American Society of Mechanical Engineers on its seventy-fifth anniversary.

In Memoriam —

As this issue closes, word is received of the loss of two of standardization's best friends.

J. H. McElhinney, for eight years a member of ASA's Board of Directors, died suddenly April 12. He was vice-president in charge of operations of Wheeling Steel Corporation, and had been the nominee of the American Iron and Steel Institute on ASA's Board since 1947. He had spent all of his working life in the steel industries. His loss is a sad blow to the American Standards Association.

Dickson Reck, well known to those in standards work for his writings on standardization, died April 10 following an operation, at Berkeley, California.

Dr Reck had had a varied career in standardization. He had been head of the Standards Division of OPA in the early days of World War II. From 1944-1947 he had been assigned by the State Department

as adviser on industrial organization and standardization to Chiang Kai-shek's government in China. Following World War II he had been in Japan on a similar mission.

At the time of his death, Dr Reck was a lecturer in Business Administration at the University of California, and an Advisory Fellow of the Mellon Institute. He had organized and was carrying out a research program under the Standardization Fellowship sustained by the Sarah Mellon Scaife Foundation at Mellon Institute. His first book under this program has just been published. Entitled, *Governmental Purchasing and Competition,* it will be reviewed in the May issue of THE MAGAZINE OF STANDARDS. Dr Reck had also written two papers which had been published under this program—"The Role of Company Standards in Industrial Administration" and "The Role of Industry Standards in Industrial Administration." He had been continuing his research at the University of California under a grant from the Foundation. He will be sadly missed by all concerned with standards.

Our Front Cover

The train shown here in foreground is the new lightweight type described by T. C. Gray in his article on page 105. It is being built for the New York, New Haven, and Hartford Railway. It is here compared with a conventional-type train.

The Sixth National Conference on Standards

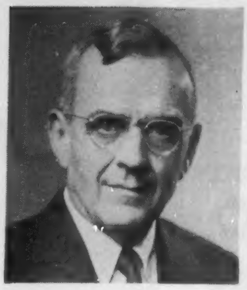
October 24-26

Washington, D.C.

Plan now *to attend the Sixth National Conference on Standards!*

Theme is Government-Industry Cooperation, and the place is, appropriately, Washington. Headquarters will be the Sheraton-Park Hotel.

The National Bureau of Standards and the American Standards Association are cooperating in presenting the Conference.



This Month's Standards Personality

Abbott Lawrence Penniman, Jr

Outstanding work in the field of steam-electric power generation has brought Abbott Lawrence Penniman, Jr an honorary membership in the American Society of Mechanical Engineers. His "eminent achievement, distinguished service, and pioneering efforts" as well as his "notable contributions to the solution of technical and management problems in the electric power and allied industries" made him eligible for this honor.

Mr Penniman finds plenty to do in his work with the Consolidated Gas Electric Light and Power Company of Baltimore. He has been with the company since 1911, and has worked up from draftsman to vice-president. Early in his career he was put in charge of the steam-electric generating stations, and directed the engineering development and construction activities of his company, particularly in power plant and allied activities. He devised many new methods to improve apparatus in power plants. As a result, he has been granted numerous patents and has gained country-wide recognition as one of our outstanding power plant engineers.

Despite this record of production on the job, Mr Penniman has also found time to devote to the work of engineering societies and technical committees. Members of ASA committees on flanges and fittings and on the code for pressure piping know him for his contributions to the early development of American Standards in these fields. At present he is a member of Advisory Committee No. 5 on Steam Turbines of the U.S. National Committee, International Electrotechnical Commission. As chairman of the joint committee on steam-turbine generators of the American Institute of Electrical Engineers and the American Society of Mechanical Engineers he helped bring about agreement on Preferred Standards which have now been adopted by the International Electrotechnical Commission as IEC Recommendations for 60-cycle machines.

Many other committees have benefited from Mr Penniman's special knowledge and interest. He served as vice-chairman of the ASME Special Standards Committee on Steam Turbines from the time it was organized in 1942. Now he is serving as chairman. He is a member of the Edison Electric Institute's Prime Movers Committee and has been chairman of the subcommittees on condensers, steam turbine-generators, and stack emission of the Association of Edison Illuminating Companies.

A special personal interest in air pollution control has kept him active in promoting the objectives of the Air Pollution Control Association, and made him chairman of the Association of Edison Illuminating Companies' Policy Committee on the subject. He is also a member of the Subcommittee on Air Pollution of the Edison Electric Institute.

The words of the citation presented by ASME are probably the best cue to the man himself—"for effective and faithful service and leadership rendered to the Society, to the engineering profession, and to the public in general; and for cultural attainments and human qualities which have won the friendship and admiration of the engineering and other professions."

General Motors

When the American Society of Mechanical Engineers was organized in 1880, today's automatic methods were barely an idea. Picture above shows 1955 assembly line in the Chevrolet plant in Flint, Michigan. Here, precisely sized pistons and connecting rods are fitted into cylinder bores. The 1890 woodcut at right shows an early installation of an ingenious moving (conveying) belt in an American plant. A series of tables carried on wheels are linked together so as to constitute an endless chain.

The Bettmann Archive

The American Society of Mechanical Engineers' Seventy-Fifth Anniversary

The American Society of Mechanical Engineers is one of the five technical societies that founded the American Engineering Standards Committee (now the American Standards Association) in 1918. ASME joined with the American Society of Civil Engineers, the American Society for Testing Materials, the American Institute of Mining and Metallurgical Engineers, and the American Institute of Electrical Engineers to set up the standards coordinating committee. At present, ASME sponsors 39 sectional committees under the procedure of ASA.

—EDITOR.

Seventy-five years of service to industry and science are being celebrated this year by the American Society of Mechanical Engineers. The first of five national meetings that will commemorate the founding of the Society was held in New York on February 16. This was 75 years to the day after 30 leading engineers met in the offices of the *American Machinist* (February 16, 1880) to discuss the formation of a national society for mechanical engineers. This year's meeting was held in the auditorium of the McGraw-Hill Publishing Company, and chairman of the special commemorative session was Burnham Finney, present editor of *American Machinist*, a McGraw-Hill publication. Donald McGraw, president of McGraw-Hill, welcomed the guests.

Since one of the principal purposes of the organization when it was founded in 1880 was for "collection and diffusion of definite and much needed information," the subject of the first commemorative session was "The Engineer and the World of Communications." Greetings were presented to ASME by 19 associations and societies representing the various communications media and fields.

David W. R. Morgan, ASME president and a vice-president on the headquarters staff of the Westinghouse Electric Corporation, called attention to some of the reasons for organizing the Society. These included collection and diffusion of knowledge; advantages from personal acquaintance among the members; educational value of the habit of writing papers and of debate upon them; and the significance of endorsement of a high quality of elected membership.

Reporting on the way the Society has carried out its purposes, Mr Morgan said, "In The American Society of Mechanical Engineers alone, thousands of men give scores of thousands of man-hours of free work every year, sometimes at considerable expense paid out of their own pockets, to the problems on whose solutions depend not only our standards of living but also our personal and national safety. In simple truth, we are free men today in no small part because engineers voluntarily assumed responsibility for and poured volunteer effort into building America's engineering strength efficiently for the benefit of all. From a group once interested almost solely in handling the resources of nature efficiently, for a personal profit or a salary, engineers have developed themselves into a profession which voluntarily channels part of its efforts to the service of all mankind in its search for a good life."

Speaking of the changes that have taken place since 1880, Mr Morgan said, "The Founders of The American Society of Mechanical Engineers knew their new Society would serve men who worked in all engineering fields. . . . They were . . . looking forward to an age of electrical power and were talking about the changes power delivered from a central station would eventually bring to the world. They anticipated aviation—but they had no intimation of radio, or that an atomic age would burst upon the world less than three quar-

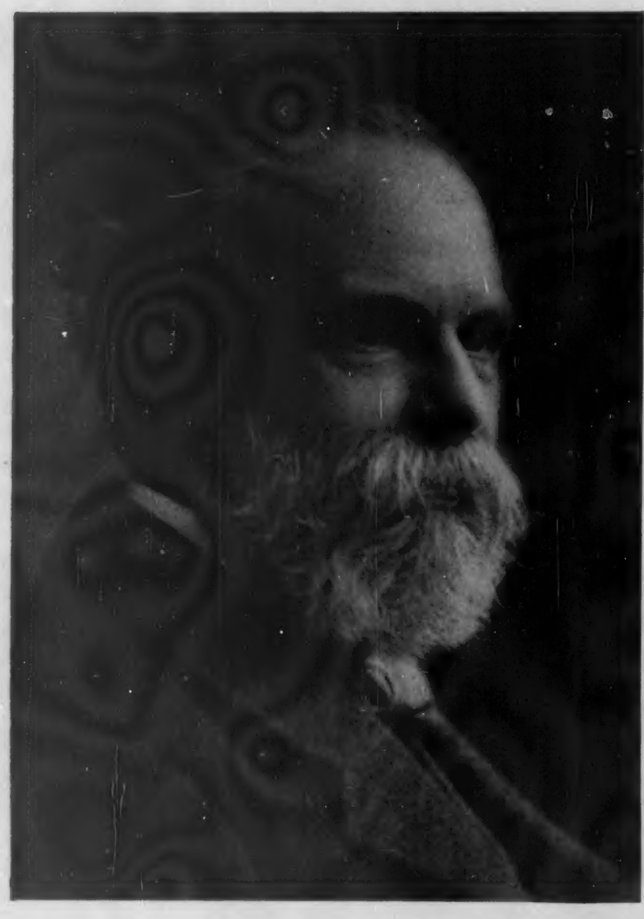
ters of a century hence. They knew a changing world was inevitable, that the mechanical engineer was essential, and that he would be called upon to serve in ways no one in 1880 could accurately foresee."

Today the ideal of the Founders—to gather, present, and disseminate information—is carried out on a scale that must surely exceed their conscious expectations, Mr Morgan said. "In the year ending October, 1954, eleven meeting or Professional Division conferences at the national or regional level (including an international meeting in Mexico City) were attended by about 13,000 people," he pointed out. "In the same period, 1,070 meetings were held by nearly 100 local groups, organized as ASME Local Sections all over our country, while another 606 meetings and 12 regional conferences were held by the 139 student groups organized as ASME Student Branches in our engineering colleges. Cooperating with the thousands of ASME committee members who give time and work each year to make these meetings worthwhile (and, often, to help Local Section meetings contribute to the solution of problems existing in local communities) are other members who assume responsibility for disseminating new knowledge in published form. The great majority of papers presented at regional and national meetings are printed in the Society's various publications, where they become available to all ASME members and the public as well. Most of these papers (they exceeded 600 in 1954 and covered more than 3,000 pages of printed text) are preprinted in order that the best discussion may be elicited before final publication. This work, of course, necessitates a paid editorial staff, as other Society activities require a competent headquarters staff. Yet in all truth, it can be said The American Society of Mechanical Engineers is a professional organization of 40,000 members of whom an amazingly high percentage contribute voluntary time and effort in promoting knowledge in their field of work so that it may be used everywhere for the good of all."

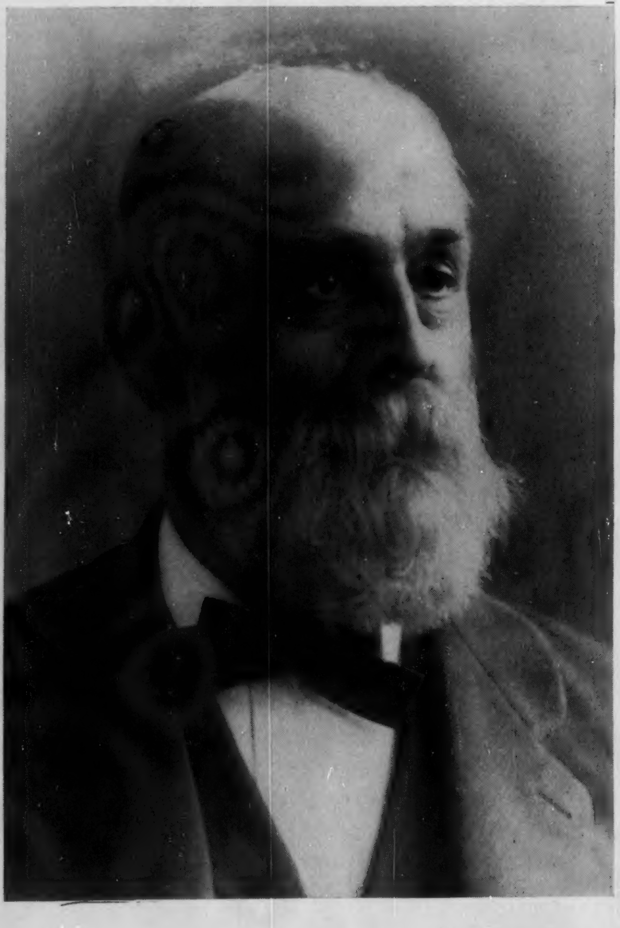
At the afternoon session at the Engineering Societies Building, a panel took up the question of "The Engineer and His Communications." Colonel Willard T. Chevalier, Executive Vice-President, McGraw-Hill Publishing Company, was chairman of this session.

Edgar Kobak, business consultant, former vice-president of McGraw-Hill Publishing Company, and former president, Mutual Broadcasting System, spoke on the engineer's communications with those outside his profession. James G. Lyne, president, Simmons-Boardman Publishing Co, New York, discussed the engineer's communica-

Robert Henry Thurston
First president of ASME, was elected at Society's first annual meeting in 1880



George R. Stetson
Pointed out need for screw thread standards at 1880 annual meeting; was vice-president, 1898-1900



tions with other engineers. Ormand J. Drake, assistant secretary and former chairman of the department of speech, New York University, told the engineers how they could improve their personal communications through writing and speaking; and E. W. Engstrom, executive vice-president, research and development, Radio Corporation of America, outlined what the engineer has meant to communications.

Following an evening banquet, Vannevar Bush, president, The Carnegie Institution of Washington, spoke on "Communications—Where Do We Go From Here?" Toastmaster at the banquet was William L. Batt, past president of ASME, former president of SKF Industries, and Chief, ECA Mission to Great Britain.

Howard S. Bean, chief of the Capacity, Density, and Fluid Meters Section of the National Bureau of Standards, was awarded the Worcester Reed Warner Medal.

This Medal is bestowed by ASME for outstanding contributions to permanent engineering literature.

The citation accompanying the award read: "For his valuable contributions to the art and science of fluid metering and his unselfish work in preparing the many authoritative publications on this subject, particularly the widely used reports of the ASME Fluid Meters Research Committee."

Dr Bush called on the federal government to undertake planning for a giant project to code the mounting volume of human knowledge and make it available "in prompt, accurate, effective fashion, and at a distance if this is desired."

He described equipment now available that can scan items at the rate of one thousand a second; photographic methods that make it possible to cram the material of a thousand books into the space of a cigarette package; and digital computing devices that can manipulate records in the form of numbers at the rate of one million operations a second.

Dr Bush deplored present "horse and buggy methods" of hunting for information, and warned that "our libraries are filled to overflowing," with much valuable data embedded in the mass. Solution of the problem, he continued, would open the way for "another spurt forward of civilization."

Dr Bush surveyed the most urgent needs for improvement in communications, and predicted that many of these would soon be met by new devices and processes. Among the possibilities he described were:

Televised telephone conferences among a number of persons at different points;

A machine "that would type when we talked to it";

A system of coding addresses that would make almost all mail sorting automatic;

Disappearance of metal type and a trend to national newspapers and more nearly current magazines;

Coded telegrams that would be keyed to preselected data already in the hands of the recipient;

Domestic alarm systems that would automatically call the fire department whenever there is either undue smoke or excessive heat in any part of a house;

A system that will permit the position of every airplane in the sky to be known centrally at all times, and possible extension of a similar system for freight shipments and trucks.

The ASME and Standards

The first standardization committee of the American Society of Mechanical Engineers was the committee on pipes and pipe threads. This committee was set up in 1885, a full 16 years before Congress authorized organization of the National Bureau of Standards. A member of ASME foresaw the need for standards and presented the suggestion at a meeting of the Society in 1889. This member was James W. See.

As long ago as 1880, George R. Stetson told the first annual meeting of the ASME that "sizes in screw threads are infinite and the number of threads to each size is infinite, too." He saw little immediate hope at that time for standardization—for what he called the millennium—"when a screw thread of a fixed size, from machines manufactured in one shop, will interchange properly with the same size from other shops." That millennium had not come in 1915 when American manufacturers were called upon to outproduce the well-planned German war economy and, in doing so, made the cost in lives and dollars of lack of standardization in screw threads and many other realms glaringly evident.

As ASME itself points out, "Out of the joint voluntary effort instigated by the five engineering societies because of the crippling effects of nonstandardization of much World War I material, the American Standards Association, with the hundreds of cooperating societies and organizations of today eventually emerged. Without it, World War II might have been a different story. Without countless hours donated by busy engineers, the standardization which eliminated so much waste in World War II efforts could not possibly have been achieved. Our engineering strength built our productive strength and increased its effectiveness precisely because the engineering profession had come of age in the period between the wars, and had assumed mature responsibilities beyond the limits of its own self-interest."

The American Society of Mechanical Engineers itself acts as a sponsor for work on dimensional standards in mechanical engineering under ASA procedure. Some 3000 members are now contributing time and work in creating new standards, and periodically reviewing old codes and standards. This group includes some of the best engineering talent in the country. They are now working on more than 350 subjects in more than 90 different fields. Cooperating with them are representatives (often engineering representatives) of manufacturers and users of equipment being standardized.

Representatives of the public, too, are always members of these committees, because standards affect the

public interest. In the matter of fire hose couplings, for example, public interest is greatly affected if, in an emergency, fire hose rushed from one town to another is useless because couplings used by the two towns are different. In Rhode Island, a few years ago, elevator accidents decreased 54 percent the first year the American Standard Safety Code for Elevators, sponsored by ASME, was adopted. Even in states where it is not yet adopted, its influence in the elevator-manufacturing industry has increased our personal safety.

The ASME Boiler Code and Power Test Codes have long been accepted as standard practice for testing steam boilers and prime movers in this country.

Back in 1884 when the first power test code committee was appointed to formulate a code that would spell out a standard method for steam boiler trials, pressures were low and modern prime movers unheard of. The reciprocating steam-driven Corliss engine that was being installed in more and more factories then, has now been replaced by steam-driven turbo - generators. Accompanying this change has been a vast change in steam generating equipment. Boiler operating pressures have risen from about 70 pounds per square inch (psi) to more than 2,750 psi. Steam temperatures have risen from about 315 F to 1,100 F. Research is now being conducted—research sponsored by ASME—looking toward ultimate pressures up to 15,000 psi and temperatures up to 5,000 F.

The codes and standards that have made these increases safely possible have been achieved by engineers who voluntarily assumed responsibility for gathering old, and discovering new information upon which to base proper specifications for safe construction, adequate testing, and safe operation year after year, and keeping this information and the standards based upon it up-to-date, as technical advances are made.

The safety that results from this service of engineers is illustrated in the decrease in the number of boiler explosions that have occurred since the first edition of the ASME Boiler Code in 1914, during a period when the number of boilers in use and their steam pressures have made such gigantic increases. Though accurate statistics are not available, existing records indicate that in the 40 years preceding 1910, some 10,000 boiler explosions occurred in the United States and adjacent parts of Canada and Mexico. The most humanly destructive of all explosions in the United States happened on a Mississippi River steamboat bringing Union Soldiers home from Southern prison camps in 1865. Of 2,021 persons aboard the *Sultana* that day, 1,238 were killed. Probably the most spectacular boiler explosion occurred at a Shamokin, Pennsylvania coal mine in 1894 when 27 boilers exploded, "like a bunch of firecrackers going off," to kill only six people and injure three more.

The other 75th Anniversary meetings planned by ASME this year are:

April 16, Stevens Institute of Technology, Hoboken, N.J., anniversary of ASME's first organization meeting, devoted to the theme, "The Engineer and the World of Education";

April 18-22, Baltimore, Md., spring meeting, devoted to the theme of "The Engineer and the World of Government";

June 19-23, Boston, Mass., semi-annual meeting, devoted to the theme of "The Engineer and the World of Science";

November 13-18, Chicago, Ill., annual meeting, devoted to the theme of "The Engineer and the World of Commerce and Industry."

With increase in the use of steam, from 1,300 to 1,400 boiler accidents were occurring every year in our country by 1910. Three or four hundred of these were violent explosions, killing hundreds of people and injuring other hundreds. Property damages and financial losses often ran high, and so did public feeling as more and more people realized these accidents were preventable. At Brockton, Massachusetts, when an explosion in a shoe factory in 1905 killed 58 people and injured 117, claims against the company that had suffered a quarter of a million dollar property loss totalled another $280,000.

The result of public feeling was that Massachusetts, along with a few other states and cities, began to make their own rules and regulations for steam boilers. Manufacturers of boiler apparatus soon found themselves compelled to meet different standards and specifications, set by different cities or states. The standards and specifications were different because there was not, as yet, sufficient accurate knowledge and general agreement among technical men as to what proper standards were.

At this point The American Society of Mechanical Engineers voluntarily entered the picture with the appointment of a Boiler Code Committee which sought and attained cooperation from other groups closely concerned with the problem. Added to those who served as ASME members were representatives of groups who used and manufactured boilers and the steel that went into them, of boiler insurance companies, state inspection authorities, technical schools, and of the public who were always among the dead when fatal accidents occurred. That Main Boiler Code Committee, with an increasing number of subcommittees as need arose for specialized knowledge in specialized fields, has been at work for 40 years. It is an outstanding example of acceptance of responsibility by an engineering society and its members for the welfare of human beings as their professional obligation and achievement. As a result of its work, serious boiler explosions with loss of life are a rarity in American industry or on American ships today, and would be a greater rarity in small home boilers if the public were more alert to the advantages of home-size boilers bearing the ASME stamp of approval.

Realistic Goal for

Railway Passenger Car Design

by T. C. Gray

ABSTRACT

If we were to believe those gloomy prognosticators who are convinced that rail travel is fast going the way of the horse and buggy, presentation of a paper such as this would border on the ridiculous. The author, however, has a firm conviction, and in this he is not alone, that rail transport of passengers is and will continue to be a vital and necessary part of our economy, and that related problems, many and knotty though they be, are capable of solution. A reasonable measure of success in meeting and solving these problems should produce profitable passenger operation for the railroad industry. The potential market for railroad passenger travel is tremendous—and growing! Leaving the problem of rates, public relations, services, schedules, etc, to experts in those fields—is there one wherein the car builder figures prominently? This question was well answered in an editorial appearing in a recent issue of Railway Age *which states in part:*

"The basic difficulty in the carriage of passengers by rail today is that it costs too much—for the railroads. Surely the gap is not to be found in 'profits' of the passenger-car builders. People don't consider abandoning a business which provides substantial profits. The real key is that the railroads are trying to fight mass-produced and mass-purchased automobiles and buses—even air transports—with custom-built equipment purchased generally in small lots, and in erratic 'peaks and valleys,' to individual road specifications. The buyers demand weight and strength factors completely out of proportion with other forms of transportation."

New lightweight passenger train construction, central auxiliary train line power supply, and effective standardization are the principal ways suggested by the author to put the railroads in a more favorable competitive position to meet today's transportation needs.

As of January 1, 1954, only 7.75 percent of all passenger train cars owned or leased by Class I railroads and the Pullman Company were between 1 and 5 years old, while 62.8 percent were over 25 years old. The average age of all passenger train cars was 28.9 years. At the beginning of 1953, all railroads and the Pullman Company owned fewer passenger train cars than at any time since 1902. Obviously, maintenance is greatly accelerated with increase in life. Obsolescence may well be closely related to the approximate $60 million reduction in coach and the near $14 million reduction in parlor and sleeping car revenue between 1947 and 1952.

Pullman-Standard's Experience

In the period 1945 through 1953, we built 1235 domestic nonsleeper passenger train cars from 151 different floor plans for 41 different customers; 43 percent of these had less than 3; and 73.5 percent had less than 7 cars per plan. In this same period, we built 913 domestic sleeping cars, excluding troop sleepers, from 66 different floor plans and for 36 different railroads. Of these, 21 percent had less than 3, and 42.5 percent less than 7 cars per plan. While there are 6 basic sleeping accommodations, we engineered and built 25 different types.

Added to the many variations in plan arrangement are the numerous design and equipment variables dictated by customer specifications. Of the 10 major parts of the passenger-car underframe, there are 29 considerations or details to settle. On 8 parts of the superstructure, we have approximately 30 variables. The electrical systems comprise 32-, 64-, and 110-volt direct current, 110- and 220-volt alternating current, and various combinations of these voltages. Generator applications vary from 5 kilowatts to 35 kilowatts, with various types of drives. Battery specifications vary from 340 ampere-hour to 1294 ampere-hour. Lighting may be all incandescent, all fluorescent, or combinations of both, plus night and emergency lights. Three different types of air-condi-

Mr Gray is vice-president of engineering, Pullman-Standard Car Manufacturing Company, Chicago, Illinois.

This article presents the sections on standardization from a paper given by Mr Gray at the Annual Meeting of The American Society of Mechanical Engineers November 28-December 3, 1954. The paper was contributed by the Society's Railroad Division.

tioning systems are applied. These are manufactured by four different vendors—no parts of any system being common or interchangeable with any other. Three different types of condensers, four different types of air diffusers, with possible material variations, are used. We apply two different systems of air brakes with disk, clasp, or combination and with variations as specified on braking power, brake control, and wheel-slide control. Three different water systems are available with tank capacity varying from 25 to 500 gallons and in various materials as specified. Heating-system applications also are varied with numerous types of controls and regulators. Of the 22 major truck considerations, there are more than 50 details which may vary.

These major detail settlements which permit approximately 200 possible variations, along with further diverse interior finish schemes, floor plans, and room arrangements, make for near infinite combinations and obviously prevent economic manufacturing processes and effective use of master plans or bills of material. Unjustifiably high first cost is the end result.

Penalty for Custom Building

The entire car building industry during the postwar (through 1953) period built 4275 domestic passenger and sleeping cars, excluding troop cars. A very conservative penalty of $12,000 per car as a result of "custom building" and as dictated by railroad individual preferences defines a penalty of more than $50 million in first cost alone—and this is just the beginning.

Use of special, inconsistent designs and items of equipment has cost the railroads many more dollars in expanded inventory, added maintenance, and alteration work to correct service-produced difficulties not previously anticipated. The Pullman Company, in its operation of sleeping cars, found a total of 33 different sizes and types of batteries in the postwar sleepers assigned to them. From the standpoint of inventory alone, this presented a nearly impossible situation. By careful study, they were able to safeguard themselves by carrying 9 types for replacement. Obviously, if the cars can be maintained properly with 9 types, they could have been so equipped in lieu of 33 types.

With the foregoing in mind, one wonders how the railroad can afford to purchase, how the builder can afford to build, and how the vendor can afford to participate in such a highly customized program. In fact, it would appear mandatory that such philosophy be changed. Had the automotive industry been forced to follow this path we tread, the public would still be driving "one lung" cars —if driving at all.

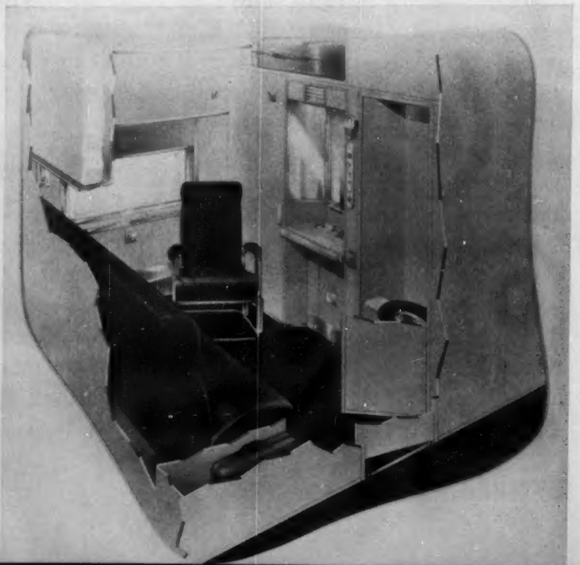
Obviously, the car builders are making every effort to better the situation just described. At Pullman-Standard we continually gather information relative to car operation and maintenance from every possible source. This is checked and analyzed with a view towards incorporating into our base designs such standards, processes, and material changes as obviate repetition of the troubles encountered.

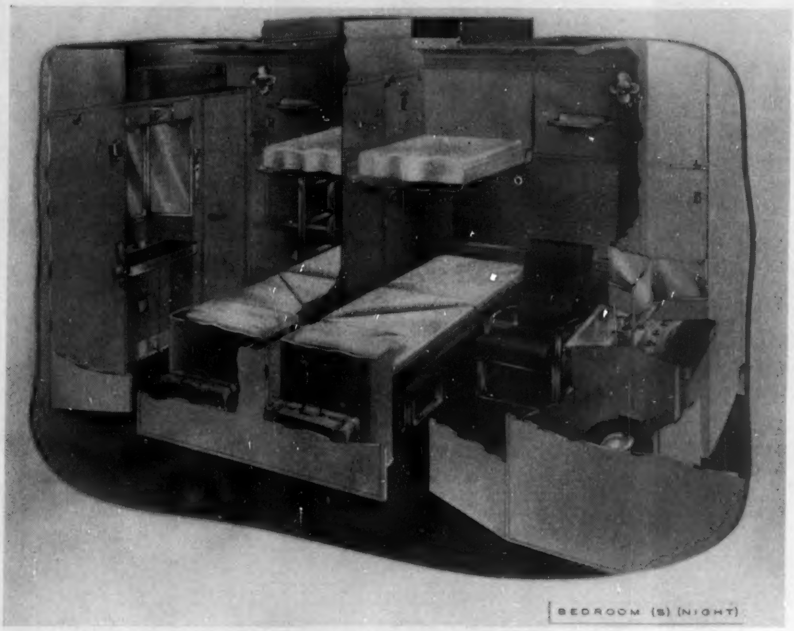
The "Module" Principle

We are also designing on the "module" principle in an effort to arrive at the greatest possible flexibility in plan arrangement without the necessity of imposing a corresponding cost penalty. Basic sleeping rooms are engineered as units together with electric lockers, general toilets, air-conditioning installations, linen-equipment lockers, etc, and six basic floor plans are available into which these individual units may be so arranged as to meet railroad requirements. This module principle, by enabling us to make many combinations without extensive engineering and tooling costs, will provide modern units thoroughly tested and proven but at a worthwhile reduction in first cost. We also are concentrating on component interchangeability between primary assemblies thus helping to simplify customer inventory.

Illustrated in Fig. 1 is the basic plan outline showing air conditioning and vestibule locations. Arranged around it are our pre-engineered modules or units. Figs. 2 to 4 show some of the many possible arrangements of these modules into

Sleeping car compartment (right) and bedrooms (left) designed according to the "module" principle, fit into standardized basic floor plan (Fig. 1, page 108). Both are set up for daytime use.





Standard sleeping car bedrooms shown on page 106 set up for night use.

acceptable plans. On these two pages are typical views of some of our standard rooms.

Efforts at Standardization

In 1948 a number of railroad presidents indicated their interest in the vital problem of standardization by requesting the American Railway Car Institute to sponsor a study for the improvement of plan arrangement. A committee, composed of representatives of the various car builders, has taken active interest in this very worthwhile project and has made considerable "paper" progress. Nineteen floor plans covering all types of nonsleeping cars were approved by the Association of American Railroads in 1950. In 1952 agreement was reached on six basic sleeping-car plans, which will shortly be resubmitted to the AAR for final action.

Even with the conventional type of passenger car, definite and substantial savings can be effected in first costs, as well as maintenance and operating costs, if the railroads will consider seriously the studied recommendations of the car builders and the ARCI. A flexible form of standardization obviously will minimize "individualized" equipment.

We are also sure that modular planning will produce further economic and quality benefits to those railroads that accept the principle in fact as well as in theory.

All of this planning and work is futile, however, unless real and live interest on the part of individual railroads is demonstrated. Unfortunately, inquiries received since AAR approval of the nonsleeper plans lead us to suspect that member roads sometimes hold little regard for the utterances of their governing body.

While standardization of conventional equipment to the extent that it is actually accepted will certainly reduce the cost thereof, weight and cost per seat will still remain relatively high. Much greater potential gain lies in the concept of complete train redesign wherein these ratios are to be greatly improved. While admittedly involving principles at variance with conventional attitudes, there can be no doubt that ultimate salvation lies only in this approach. [NOTE: *Here Mr Gray discussed lightweight trains, the benefits of weight reduction, use of central auxiliary power, cost of equipment, economy in the central power system, air conditioning, heating system, passenger car materials, fabricating techniques, use of plastics, over-all train design, some historical notes, and trains meeting the requirements of specifications proposed for approval by the Association of American Railroads.*]

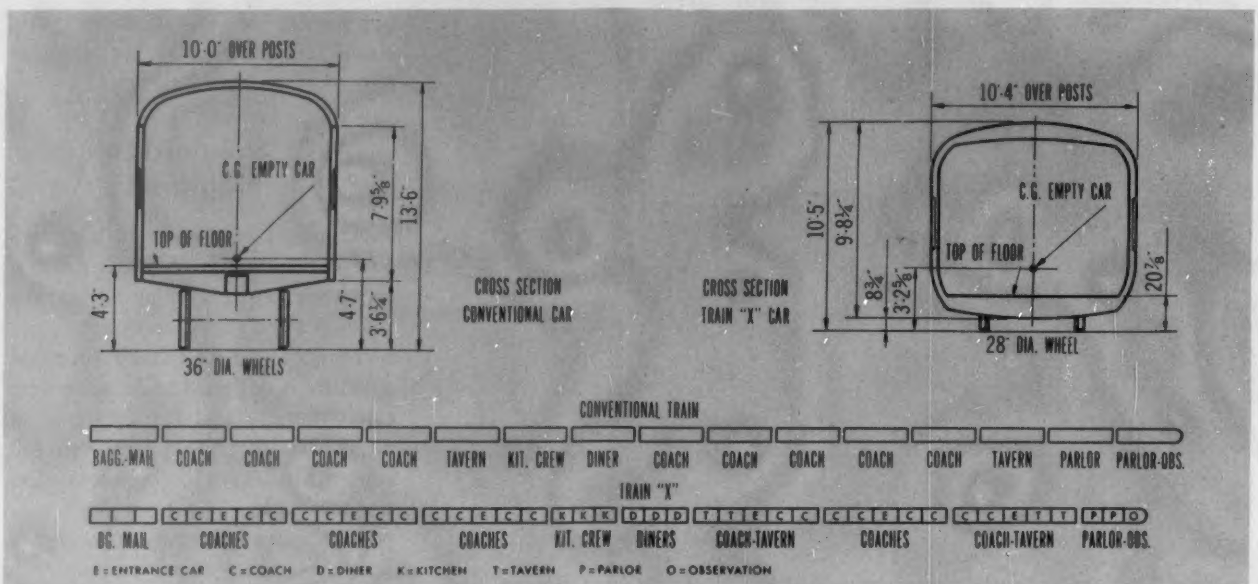
ARCI Standardization Program

An effort was made in the forepart of this paper to stress the uneconomic aspects inherent in the "complex job shop" approach to car building. The ARCI standardization program is designed to help alleviate this situation, and for the good of all concerned should be given full support by railroads, vendors, and builders alike. The term "full support" implies adherence to accepted standards as well as co-operation in their development. Customized building with the necessary use of small volume and specialized components should warrant early investigation by all three interested parties with the mandatory target of effecting early improvements.

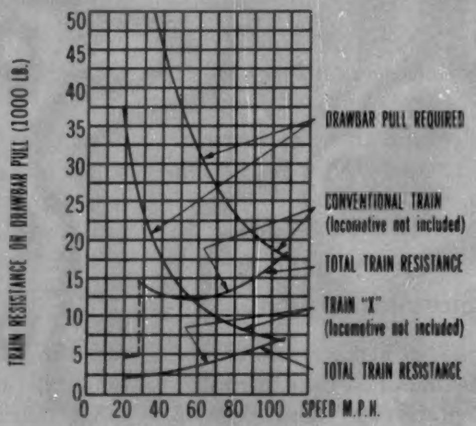
Individualized or special requirements are always costly and certainly should be introduced only on the basis of sound and compelling logic. AAR and ICC requirements should be reviewed and where necessary brought in line to meet changing trends and needs.

Bearing in mind that so-called conventional propulsion and trailing equipment represents an investment of millions of dollars and that it will not soon be scrapped in wholesale lots, some new cars of this design will be needed. Such cars can be made much less costly to purchase, operate, and maintain if standardization is made the byword. An appeal for standardization is not a builder's request for cars on an "alike as peas in a pod" basis. Individuality and distinctiveness can be accomplished without sacrifice of important standards. Neither does the word standardization mean lack of progress and improvement. Both must be continuous, but it is vital that introduction of resulting changes be orderly and carefully timed.

Our present electrical systems probably offer the most immediate and fertile field for a program of standardization. Replacing the many divergent and costly systems with

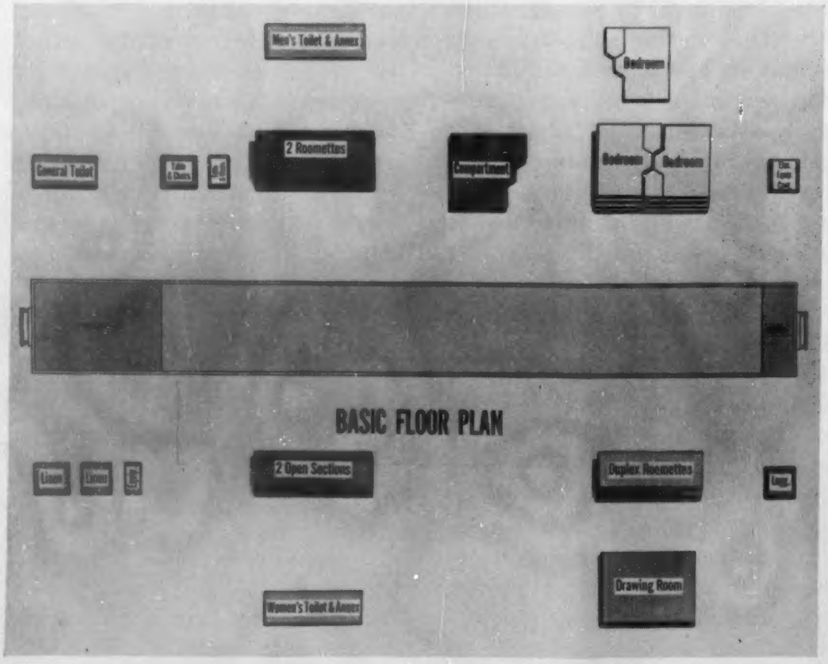


	CONVENTIONAL TRAIN	TRAIN "X"
CAR LENGTH	85'-0"	31'-2½"
COUPLER HEIGHT	2'-10½"	13½"
TRAIN LENGTH	1360'	1311'
LENGTH PER PASSENGER (FEET)	2.48'	2.22'
TRAIN WEIGHT LOADED (TONS)	1188	512
WEIGHT PER PASSENGER (LBS.)	4160	1566
NUMBER OF PASSENGERS	548	588
HEIGHT—C.G. ABOVE RAIL (INCHES)	55"	38⅝"
WHEEL DIAMETER	36"	28"
HEIGHT OF FLOOR	4'-3"	20⅞"
OVERALL HEIGHT OF CAR	13'-6"	10'-5"
NUMBER OF AXLES	64	42
WIDTH OVER POSTS	10'-0"	10'-4"



How conventional train differs from new lightweight train (Train X), above.

Fig. 1 (below). Basic floor plan of proposed new car follows modular principle. Rooms and equipment are designed to fit in a variety of combinations.



central auxiliary power is entirely within reason, and the potential economic benefits make serious consideration well justified.

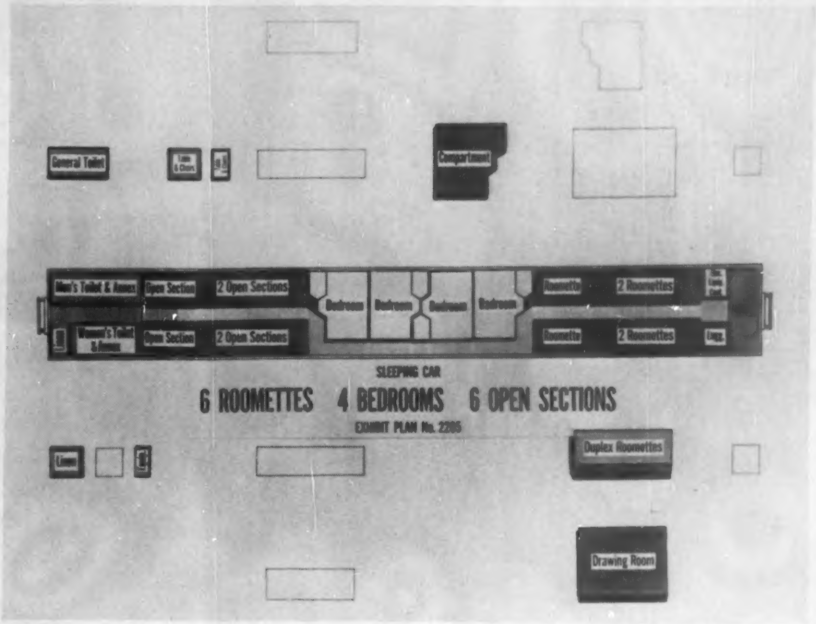
Just as some 20 years ago the then new streamlined trains established a design concept that was to hold until the present day, recent developments make it clear that we have entered another, and probably more radical period of evolution. From this should ultimately emerge a vastly superior product, more competitive with other means of transportation, and far less costly to own, operate, and maintain than conventional equipment. Design along the line of the lightweight trains, such as "Train X" (see cover) should permit nonmarginal gains without the necessity for huge expenditures to change existing rights of way.

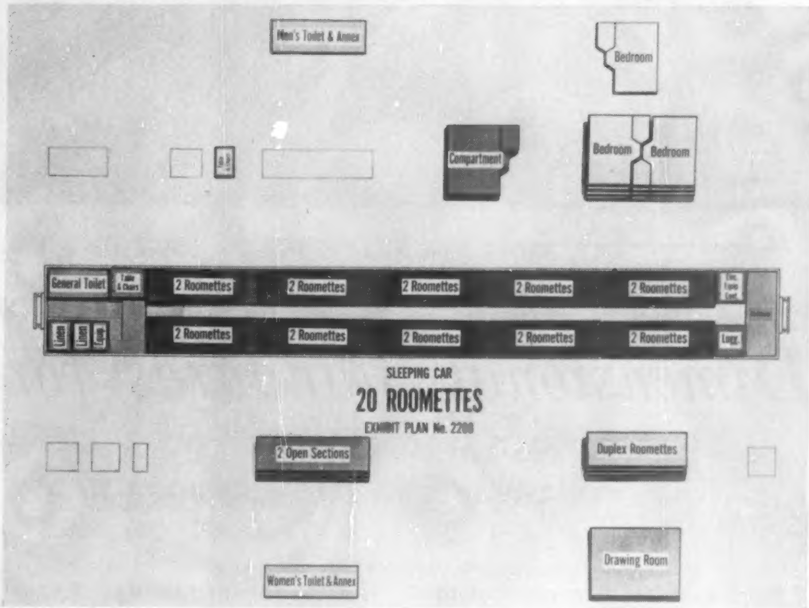
Conclusion

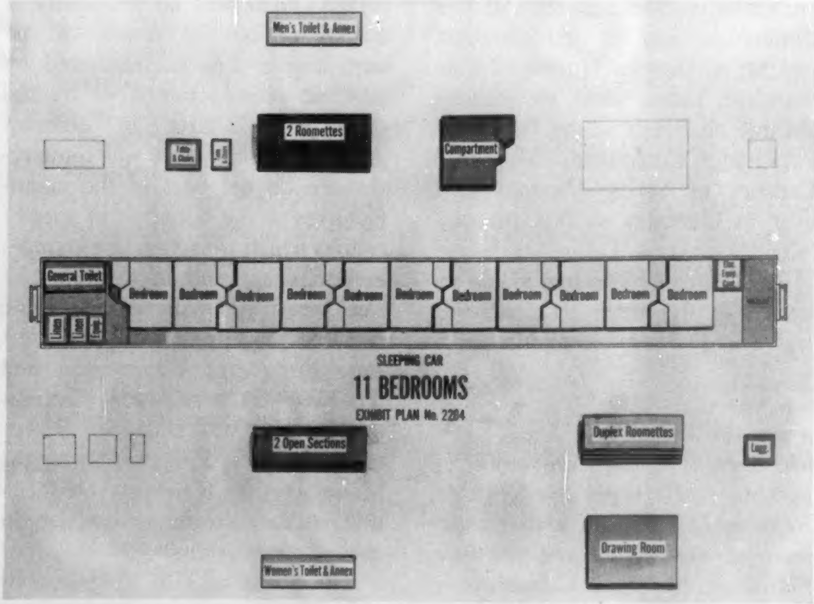
Whether individual railroads shall seek to revitalize passenger operations through use of much improved conventional equipment, by conversion to cars and locomotives of greatly reduced cost, or through a combination of the two approaches is, of course, a decision which can only be made by their respective managements after giving proper weight to the many influencing factors. The builders can be of service in presenting suggestions backed by sound engineering and economic studies, and by standing ready to build the kind of equipment best suited for the service in question.

The builders and those who provide special car equipment can be of further service by working to improve their products. The builder must build better and more trouble-free cars to allow higher availability and utilization and greatly reduced maintenance. It would be most helpful to the builder and to the railroad to have equipment interchangeable with respect to application.

It is believed, that with a sincere interest and belief in the potential improvements that can be made in the railway passenger field, and with all-out effort on the part of the railroads, the builders, and the vendors, the railroads could soon regain their leadership in this very vital and necessary part of our economy.





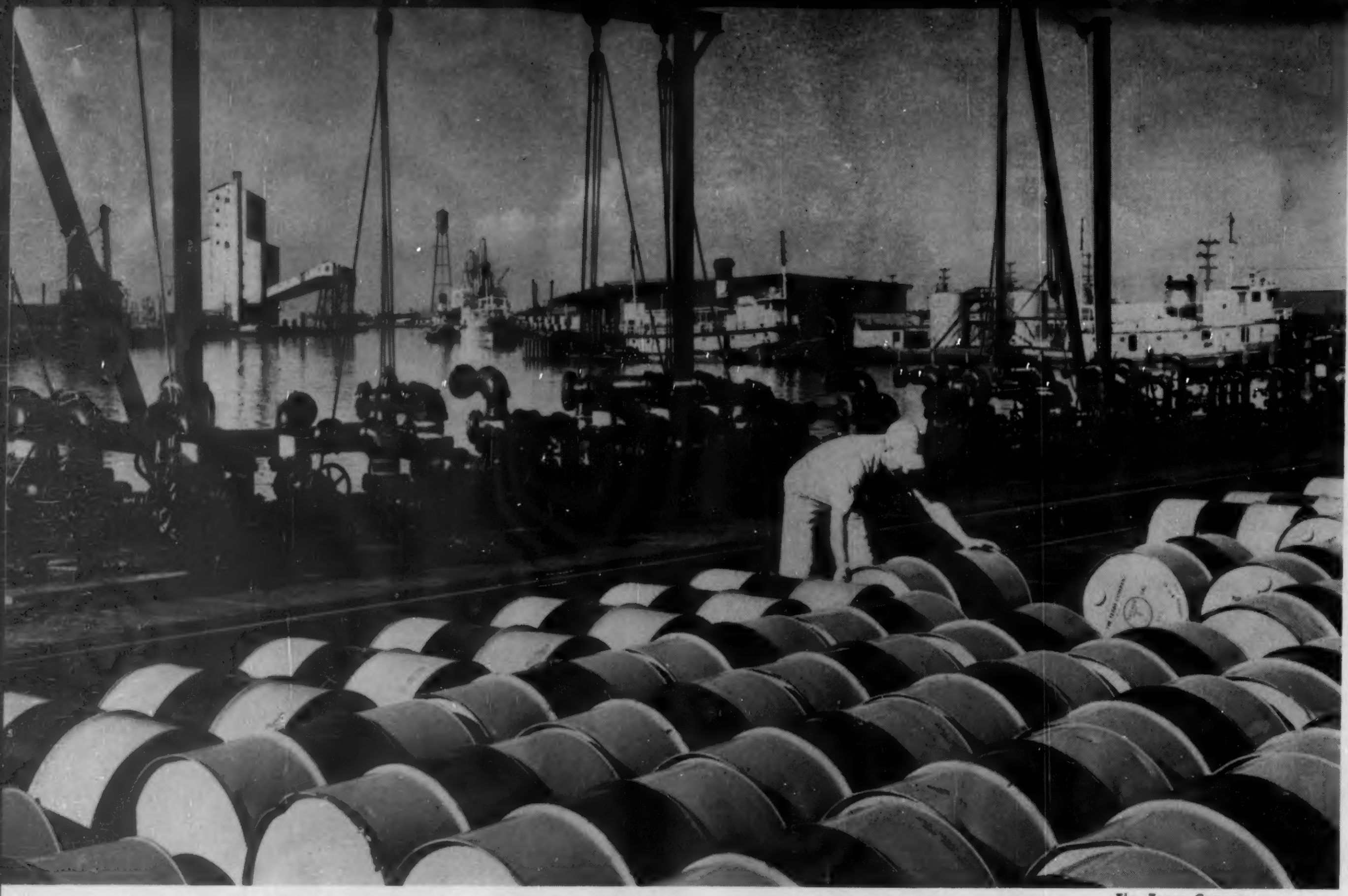


Sleeping Car Plans Show How Modular Units Fit in Different Combinations

Fig. 2. (above) A sleeping car with combination of 6 roomettes, 4 bedrooms, and 6 open sections. Blank space shows modular units used in this car.

Fig. 3. (center) An all-roomette car using a different combination of modular units.

Fig. 4. (below) Still a different combination of standard modular units are fitted together in this 11-bedroom car.



Metal drums ready for shipment at Port Arthur, Texas, Terminal.

Dimensional Standards for Metal Drums

by R. C. Reed

Prior to 1950, a number of organizations were interested in establishing standard specifications for the metal drums used in the petroleum and chemical industries. Among these were the National Association of Purchasing Agents, the Steel Shipping Container Institute, the API Lubrication Committee, and the National Lubricating Grease Institute. Very little progress had been made, however, at the time the Petroleum Packaging Committee of the Packaging Institute was organized in early 1950. All of the other agencies mentioned above gave their approval to having the Petroleum Packaging Committee take on this problem.

From the NLGI SPOKESMAN, November 1954.

A subcommittee was formed, known as the Metal Drum and Pail Committee, and its first chairman was Mr A. Douglas Murphy of Esso Standard. Later, when Mr Murphy became chairman of the Petroleum Packaging Committee, Mr Fred Langner of Socony-Vacuum took over as chairman of this subcommittee.

This subcommittee had many obstacles to overcome in developing and coordinating acceptable specifications for all of the agencies involved. There was no uniformity in the dimensions of drums of the same capacity as manufactured by different manufacturers, or by the same manufacturer in different plants. Naturally there was some resistance on the part of the manufacturers to the adoption of specifications which would require changes in equipment and in inventory of steel sheets. Also, any changes made required the approval of the Interstate Commerce Commission and the Freight Classification Committee. Also it was necessary to coordinate the specifications with the Manufacturing Chemists Association, as they are the second largest user of metal drums.

The advantages to be gained by

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Mr Reed is Texas Company's Supervisor of Packages and Shipping, Refining Department, and is chairman of the Publicity Committee, Petroleum Packaging Committee.

having uniform specifications were such that the Petroleum Packaging Committee considered any effort required to develop and get them approved would be justified. The advantages which have been gained by the specifications, as finally adopted, are:

1. A greater quantity of product can be filled into the standard drums. The so-called 55-gallon drum, as previously manufactured, did not have sufficient capacity for 55 gallons of most petroleum products. The new drum will have this capacity plus the necessary outage. These remarks also apply to the 30-gallon drums. The 15-gallon drum has been made uniform in body size with the new 120-pound grease drum and will have a capacity of 16 liquid gallons.

2. Considerable trouble had been experienced in the past with palletizing, handling, and loading drums owing to variations in height and diameter of drums of the same capacity. This condition will be overcome with drums having uniform dimensions.

3. It has been necessary in the past to have an ICC-17E drum with a convex head for flammable products and for U.S. Government contracts. Industry, on the other hand, has used an ICC-17X drum which has a flat head. The new universal drum will meet specifications ICC-17E, will have a convex head, and will be substituted for both the old ICC-17E and the ICC-17X.

4. Filling operations will be simplified as all drums will be of uniform dimensions and of uniform capacity.

5. Drum manufacturers will benefit, as they will need to carry an inventory of only one size sheet for each size drum. Also, it will not be necessary for them to change the equipment setup to manufacture drums for different customers.

The Drum and Pail Subcommittee of the Petroleum Packaging Committee has devoted four years of hard work to developing uniform specifications and getting the necessary approvals for their adoption. They were given final approval at the September meeting of the Petroleum Packaging Committee in Philadelphia and will now be published by the Packaging Institute and by the Steel Shipping Container Institute. It is anticipated that eventually they will be made American Standards by the American Standards Association.

The drums involved in this standardization program are:

55-gallon (U.S.) Tight Head Universal Drum
400-lb/55-gallon (U.S.) Full Removable Head Drum
30-gallon (U.S.) Tight Head Universal Drum
16-gallon (U.S.) Tight Head Universal Drum
5-gallon (U.S.) Tight Head Universal Drum
5-gallon (U.S.)/35-lb Lug Cover Universal Pail

NEWS BRIEFS

• The scope of ISO Technical Committee 30, Measurement of Fluid Flow, was modified recently. It now includes rules and methods for the measurement of fluid flow in closed conduits and of liquid flow in open channels by means of suitable devices. The scope of work will cover the following: Terminology and definitions; rules for inspection, installation, operation; construction of instruments and equipment required; conditions under which measurements are to be made; rules for collection, evaluation, and interpretation of measurement data, including errors.

Course at Columbia University

One of the few college courses on industrial standardization is being taught by F. Crampton Frost, civil engineer on the staff of the American Standards Association. The two-hour, one-night-a-week course is being given in the School of General Studies, Columbia University. Both undergraduate and graduate credit is given in industrial engineering. This is the course formerly taught by Dr John Gaillard.

Mr Frost reports that all of the students in his class are employed in positions where the use of standard practices is of special value. For this reason he is emphasizing the practical aspects of standardization and approaching the theory of standardization by using examples of its practical application. Among the students are a process engineer; a standards manager; a quality control engineer; and a number of development engineers, particularly in the electronics field.

• Dr A. G. Scroggie, duPont Textile Research Laboratory, Wilmington, Delaware, and member of several ASA sectional committees on textiles, has been named chairman of a new subcommittee of ASTM Committee D-13, Textile Materials. The subcommittee will handle for D-13 all matters relating to international standards for textile test methods referred to ASTM by ASA Committee L23. Entitled "U.S. Committee for ISO TC 38 on Textiles," Committee L23 represents the ASA in activities of this international technical committee.

A special section of the new subcommittee serves in the name of ASA as the secretariat for Subcommittee 5 on Yarn Test Methods of ISO Technical Committee 38. Comments by participating countries on nine USA proposed test methods are at present receiving consideration by the special section in revising these methods. Additional sections will be set up if required for other secretariat assignments.

According to Dr Scroggie, the subcommittee expects to be able to handle some of the work itself but plans to send many of the questions that arise to existing competent technical groups of D-13 for action. Among the many questions now awaiting consideration by the subcommittee are proposed ISO methods for testing colorfastness, and for shrinkage in laundering, as well as comments on a number of documents under consideration by other ISO technical subcommittees.

WHAT IS YOUR QUESTION ?

Is a revised edition of American Standard Drawings and Drafting Practice, Z14.1-1946, available?

A revision of this standard has been under way for a number of years. The revised edition will be in the form of a Manual, which at present is tentatively entitled, "American Drafting Standards Manual." Although no sections of this Manual have been approved to date, a number of the 18 sections contemplated have been distributed for industrial comment and criticism. Of these, seven sections have been sent to letter ballot of Sectional Committee Y14:

Section	*Title*
1	Size and Format
2	Line Conventions, Sectioning, and Lettering
3	Projections
4	Pictorial Drawings
6	Screw Threads
7	Gears, Splines, and Serrations
11	Plastics

The Manual will be published by the American Society of Mechanical Engineers, 29 West 39 Street, New York 18, N.Y., sponsor for project Y14 (formerly Z14). Sections 1 through 5 covering general drafting practice will be made available as a group after approval by the American Standards Association. Other sections will be released individually as approved.

Is work being done on American Standard tolerances and limits for "class 5" or "stud fit" NC and NF screw threads?

No work is being considered at present on tolerances and limits for "class 5" fit. The committee believes that so many variables are concerned that it is not practical to establish limits and tolerances for this type of fit.

What is the difference between the SAE or American measurement for horsepower and the German (DIN) horsepower?

The European "cheval vapeur" (German "pferdestarke") is 75 kilogram-meters per second while American "horsepower" is 75.9 kilogram-meters per second or 550 foot-pounds per second. Therefore, 1 pferdestarke equals 1 cheval vapeur which equals 0.986 American horsepower. Or, in other words, 1 pferdestarke equals 1 cheval vapeur which is equal to 0.736 kilowatt; while 1 horsepower is equivalent to 0.746 kilowatt.

GOVERNMENT STANDARDS

16

By S. P. Kaidanovsky

How the City of Philadelphia Has Gone About Setting Up a Standards Program

Why This Article?

The study of purchasing activities of states, counties, and cities, large and small, in connection with preparation of this series of articles on Government Standards, has revealed many interesting facts. One of the most significant is the reluctance on the part of some state and local governments to set up a standards program. The reason given is that an appropriation to carry on such a program is a taxation burden, rather than an investment which pays dividends. Actually, it has been demonstrated that purchasing on "price" rather than on detailed description of the requirements desired is uneconomic and inefficient. On the contrary, purchase of commodities in accordance with specifications establishes a definite yardstick for comparison of quality and facilitates inspection and testing in order that the products purchased comply with the specification requirements.

The purpose of this article is to point out how a city procurement department has gone about starting a standards program with a nucleus staff; how it avails itself of the work already performed in the field of standards and specifications by other units of government—federal and local; and by nationally recognized technical and professional societies; and how it is utilizing inspection and testing facilities of other city departments and agencies, and also of the federal government.

It is believed that the experience of the city of Philadelphia may serve as a guide to other government units in starting a standards program.

Procurement Department

The Procurement Department of the city of Philadelphia (Commissioner Michael H. Sura) consists of three divisions: Services, Administrative, and Purchases, as shown on the organization chart (page 118).

Legal Authority. — The authority and responsibilities vested in the Procurement Department are set forth in Chapter 5, Sections 6-500, 6-501, "Philadelphia Home Rule Charter, Annotated," adopted by the electors on April 17, 1951, and effective on January 7, 1952.

> Section 6-500, subsection (a)(1) reads as follows:
>
> "Except as otherwise provided in this chapter, it shall purchase, and when feasible store and distribute all personal property to be procured with funds from the City Treasury. It shall establish and maintain City storehouses, develop and operate therein a uniform, modern system of stores control based upon perpetual inventory and maintain a sufficient stock of staple commodities on hand to supply the estimated current needs of all departments, boards, and commissions of the City and other governmental agencies for whom such commodities are procured with funds appropriated from the City Treasury. All purchases, other than purchases for stock, and all deliveries from such stock shall be made only upon proper requisition."

Standards Section

The Procurement Department's Standards Section (Herbert S. Schenker, Superintendent of Standards) consists of three units: Standards and Specifications, Inspections, and Testing, as shown on the organization chart (page 117).

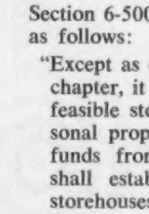
Legal Authority.—The functions of the Standards Section are set forth in Section 6-500, subsection (a)(1), which reads as follows:

> "For the purpose of exercising its procurement functions more efficiently and economically, the [Procurement] Department shall classify all items of personal property subject to procurement by it; maintain a laboratory for testing and inspecting such property; adopt as standards the minimum number of qualities, sizes, and types of such items consistent with efficient operation; and prepare, promulgate, and enforce, written specifications for all such standard items."

Establishment of the Standards Section.—In line with his authority, the Commissioner of Procurement in late 1952 established a Standards Section within the Department and assigned to it the work on standardization, preparation of specifications, inspection, and testing of commodities. This section is set up apart from the Purchase Division.

Standards and Specifications.—The Standards and Specifications Unit concerns itself with establishment of standards, limiting city procurement to a definite number of sizes and types of a given commodity. It develops and prepares formal Procurement Department Specifications and technical purchase descriptions for non-recurrent items. An important activity of the Unit is review for technical content of purchase requisitions to insure that they carry the appropriate specification. Wherever possible, such requisitions are

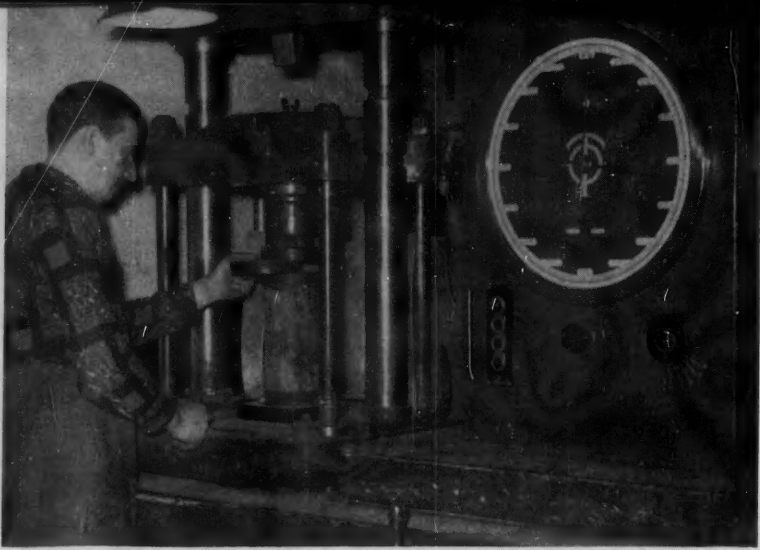
(*Text continued on page* 116)



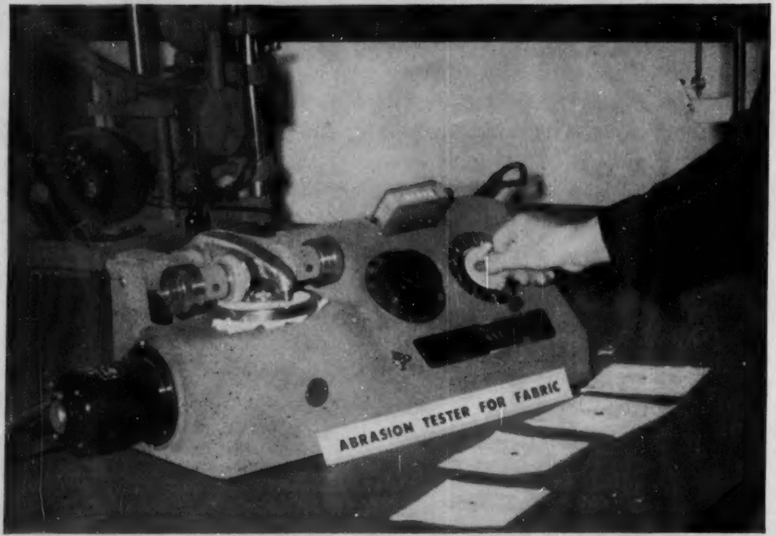
Mr Kaidanovsky is Technical Director of the Management and Technical Services, New York. He was formerly chairman, Federal Interdepartmental Standards Council; technical consultant, Federal Specifications Board, and editor, Standards World.

Some Testing Equipment that Philadelphia Uses

This is typical of equipment that many cities find helpful in checking whether materials they buy meet their requirements. City of Philadelphia finds it helpful to contract for tests with other laboratories when equipment needed is not available in its own laboratories.

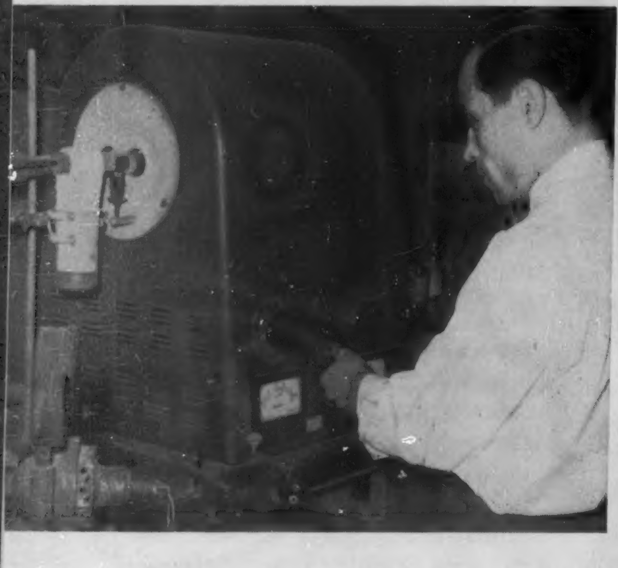


Concrete will not give way too easily under heavy loads if it meets compression tests on this electronically operated machine. (above right)



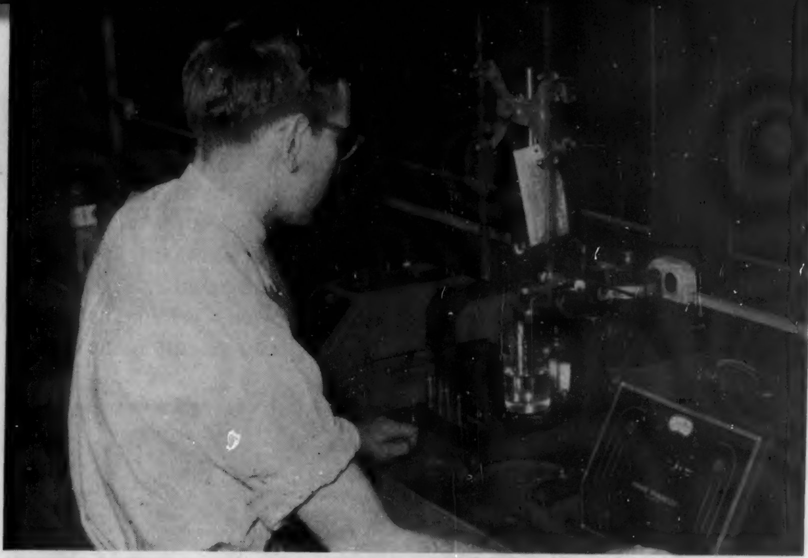
Fabrics are tested for abrasion resistance. (right)

Electric combustion furnace (below) checks on carbon content of coal.



Grinder prepares coal for analysis. (above right)

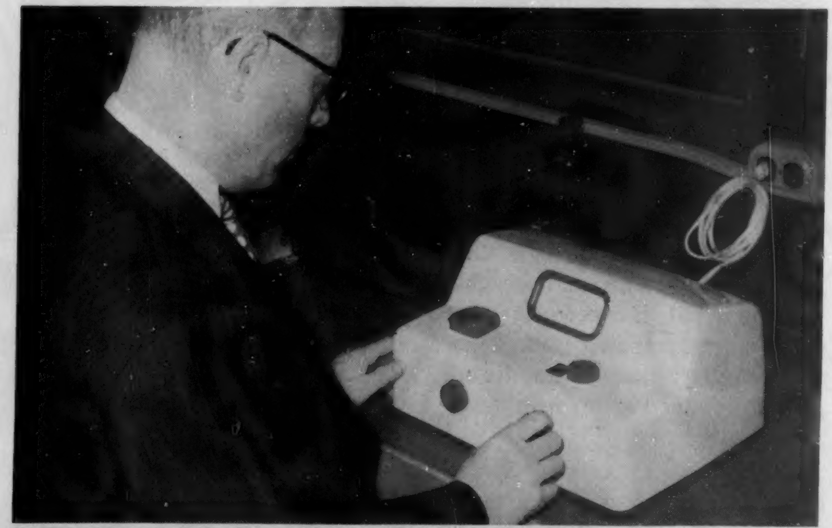
An important step in testing is to prepare samples in pre-determined quantities. Here (right), carefully prepared samples are being accurately weighed.



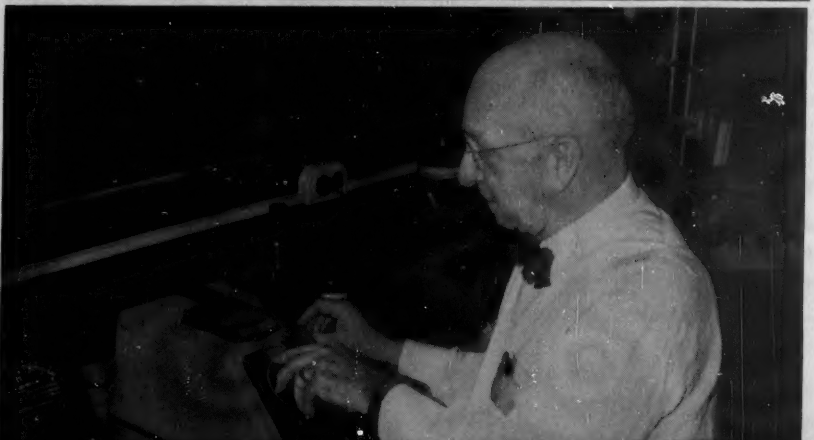
Measurement of an electrical charge determines alkalinity and acidity when materials are analyzed with this electrotitrimeter.

Laboratory director, with City of Philadelphia 51 years, here demonstrates microscope used for chemical and metallurgical observations.

With cathode ray oscillograph, transient phenomena are examined and measured during chemical or physical tests. (above right)



Up-to-date spectrophotometer is used for analyzing chemical composition.



Light emissions tell the story in chemical analysis when electrophotometer is used.

edited and modified, when necessary, to provide for proper nomenclature of a commodity that is requisitioned. During 1954 approximately 7500 purchase requisitions have been processed.

In a number of cases this Unit, because of availability of technical personnel, has prepared Procurement Department Specifications for certain departments, covering commodities used only by those departments. For instance, a series of uniform clothing specifications has been developed for the Fire Department and various hospital personnel.

When specifications are prepared by the using agency itself, they are reviewed by the Standards and Specifications Unit, and are edited if necessary.

However, because the staff is small at the present time, the Unit leans heavily on the technical competence of qualified personnel in various operating departments of the city of Philadelphia.

In case of "work contracts" for specialized or highly technical installations or equipment peculiar to a particular department, the specifications are prepared by the engineering staffs of such departments, sometimes in collaboration with other city departments. It is the responsibility of such departments to ascertain that the materials, workmanship, and end items conform to requirements of specifications. In such "work contracts," as, for example, the installation of water mains or other capital improvements, a substantial amount of labor is also contracted by the department.

The main departments which perform this type of work are: Division of Aviation (Department of Commerce), which operates the Philadelphia International Airport and Northeast Airport; Electrical Bureau and Bureau of Engineering (both in the Department of Public Property); Department of Public Health; Water Department; Fire Department; and the Free Public Library of Philadelphia.

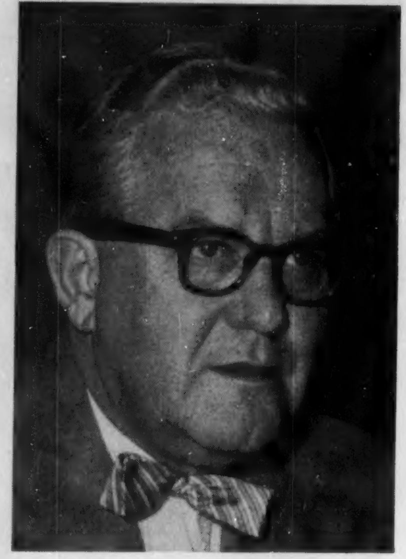
The following illustrates the cooperation of operating departments in the preparation of specifications. The Aviation Division, working with the Electrical Bureau, prepares specifications for radio equipment for the airports. The Fire Department, with the collaboration of the Automotive Division of the Department of Public Property, prepares specifications for motorized fire-fighting equipment.

However, the Standards and Specifications Unit normally initiates and develops Procurement Department Specifications for supplies furnished for use and installation by city employees, particularly those used by more than one department. For example, the city of Philadelphia buys a considerable amount of paint throughout the year, which is used by the maintenance departments of various agencies to keep buildings in repair and occasionally for new work performed by the city itself. Such paint is purchased on Procurement Department Specifications initiated and prepared by the Standards and Specifications Unit.

On the other hand, when a large contract is placed for construction of a bridge or the erection of a new wing to a building, the requirements for the paint used are only a small portion of the over-all specification. Usually the paint requirements are set up by the person responsible for the particular job, and are generally described on a performance basis.

Procedure for Development of Procurement Department Specifications. —Procurement Department Specifications are based upon commodity studies, need of the majority of various City departments, and consultation with industries concerned. These specifications, prepared by the Standards and Specifications Unit, are approved by the Procurement Commissioner.

Procurement Department Specifications are based to a great extent on information and data obtained from many sources. When occasion demands, purchase descriptions or specifications are developed on the basis of research and laboratory work done by the Standards Section in consultation with the industries affected. Comments and suggestions for the improvement of specifications are solicited from using agencies and industry, not only during the development of a specification, but also after the specification has been issued. This is being done to ascertain that the specifications are in line with the latest technological developments and that they meet the precise requirements of the using agencies. When it is found necessary, the specifications are amended or revised.



Michael H. Sura
Commissioner of Procurement

Sources of Information. — Many sources of information are being used to a great extent by the Standards Section in the development of specifications:

Federal Government—General Services Administration (Federal Specifications); Department of Defense (Military Specifications); U.S. Department of Agriculture; U.S. Department of Commerce (Commercial Standards)

The American Standards Association

Technical and professional societies and trade associations—American Society for Testing Materials; Society of Automotive Engineers; American Iron and Steel Institute; American Association of Textile Chemists and Colorists; American Water Works Association; American Association of State Highway Officials; and others.

Material of the Canadian Government Specification Board and the British Standards Institution has been used.

In addition, specifications of large and small industrial groups are being consulted.

Many of the specifications developed and published by the above organizations, suitable to the city

requirements, are referred to in the invitations to bid. When it is found that such specifications do not meet the requirements of the Procurement Department, they are modified accordingly and are adjusted closely to the actual needs of the using departments.

Board of Standardization

Groundwork has been laid for the establishment of a Board of Standardization. This is being done to formalize the consultative procedure and to bring together and utilize on a coordinated basis the best technical competence available in many city departments for the development of standards and specifications. When such a Board is created, the responsibility for standards and specifications will still remain with the Procurement Department and will require the final approval of the Procurement Commissioner. His approval will be based on recommendations of the Board, of which the Superintendent of Standards will be chairman.

The Board is to be patterned after the Committee on Standardization and Specification suggested in the Model Purchasing Ordinance prepared by the National Institute of Municipal Law Officers (NIMLO), edited by Charles S. Rhyne, General Counsel of the NIMLO.[1]

Section 2-105 of the Ordinance, entitled "Committee on Standardization and Specification" outlines the membership of such a committee; the powers of the City Purchasing Agent, including the enforcement of specifications adopted by the committee; the duties of the committee, such as classification of all supplies used by the various branches of the city government, the adoption as standards of the minimum number of qualities, sizes, and varieties of supplies consistent with the successful operation of the city government; preparation of specifications for standards supplies; mandatory use of approved standard specifications; utilization of laboratory and engineering facilities of the city and its technical staffs in connection with the adoption of standards and development of specifications; and consultation with using agencies.

Outline of Form for the Preparation of Procurement Department Specifications

The outline of form of the Procurement Department Specifications is patterned after Federal Specifications, and consists of six sections:

1. Classification
2. Applicable specifications
3. Requirements
4. Sampling, inspection, and tests
5. Packaging for delivery
6. Notes

Identification of Procurement Department Specifications

Each individual specification is identified by a symbol, patterned after the one used by the Department of Purchase of the city of New York (see "New York City Plans for More Efficient Purchasing Through Standards", by the author, THE MAGAZINE OF STANDARDS, September 1954). For example, Tentative Specification for Paper, Teletypewriter, issued in 1955, is identified as follows: 29-P-5a:55T, where

(*a*) The number "29" refers to the specification class—office equipment (supplies and stationery).
(*b*) The capital letter "P" refers to the first letter in the name of the commodity (paper).
(*c*) The next number "5" identifies the particular specification within the class letter sequence.
(*d*) The small letter indicates the number of amendments to a specification, the letter "a" signifies the first amendment.
(*e*) The third number "55' denotes the year of issuance.
(*f*) The capital letter "T" following the year of issuance signifies that it is a Tentative Specification.

Index of Procurement Department Specifications

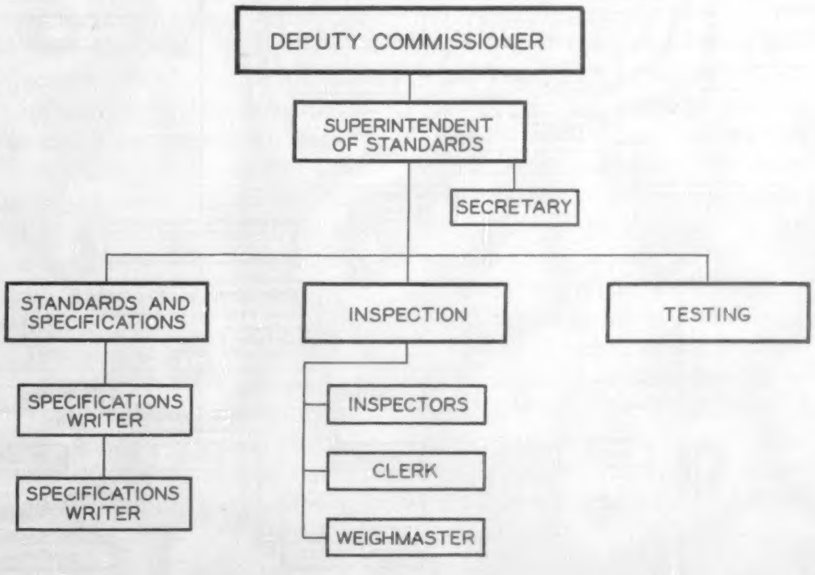
An index of Procurement Department Specifications lists all specifications issued since the establishment of the Standards Section. Approximately 200 specifications are available at present, making a total of 300 items.

Inspection of Commodities

In general, inspection is conducted at either point of origin or point of delivery depending upon the particular circumstances which exist with respect to the commodity.

Routine inspection at the point of delivery consists mainly of quantitative verification of delivery and such examination as can be made on the spot with but few exceptions. The inspection covers the supplies purchased by the city. However, since mere examination at point of delivery is admittedly insufficient in many

The city of Philadelphia procurement department standards section



[1] A copy of the *NIMLO Model Purchasing Ordinance—Annotated* is available from the National Institute of Municipal Law Officers, 726 Jackson Place, N.W., Washington 6, D.C., price $2.00.

instances, the following procedure is followed. The inspector's copies of purchase orders are routed through the Standards Section. Whenever the situation so warrants, an appropriate notation on the inspector's copy instructs him to obtain a sample for submission to the laboratory for testing purposes. The inspectors are also instructed to bring in samples on their own volition at any time they believe it to be advisable.

Commodities Inspected by the USDA for the City of Philadelphia

Commodity	Point of Inspection	Cost Paid By
Meat	Suppliers' place of business	Supplier
Fresh fruits and vegetables	Delivery point	City
Canned goods	(A) Cannery for shipment of 50 cases or more (B) Local USDA office. Samples selected at point of delivery when shipment is less than 50 cases. This is done on a spot check basis only.	Supplier
Poultry, eggs, butter, fish, and frozen foods	Suppliers' place of business	Supplier

Food Inspection and Grading.—The city of Philadelphia is spending over $2,000,000 for food used by its hospitals, penal institutions, and Home for the Aged. Unless rigid safeguards are established, loss from delivery of below-grade products could be a major item. Like most municipalities, the city does not have qualified personnel and equipment to perform the necessary inspection and grading of food products. With this in view, early in 1953, the city enlarged its program of having food products inspected and graded by the Agricultural Marketing Service of the U.S. Department of Agriculture (USDA), which has specialists for the various types of commodities.

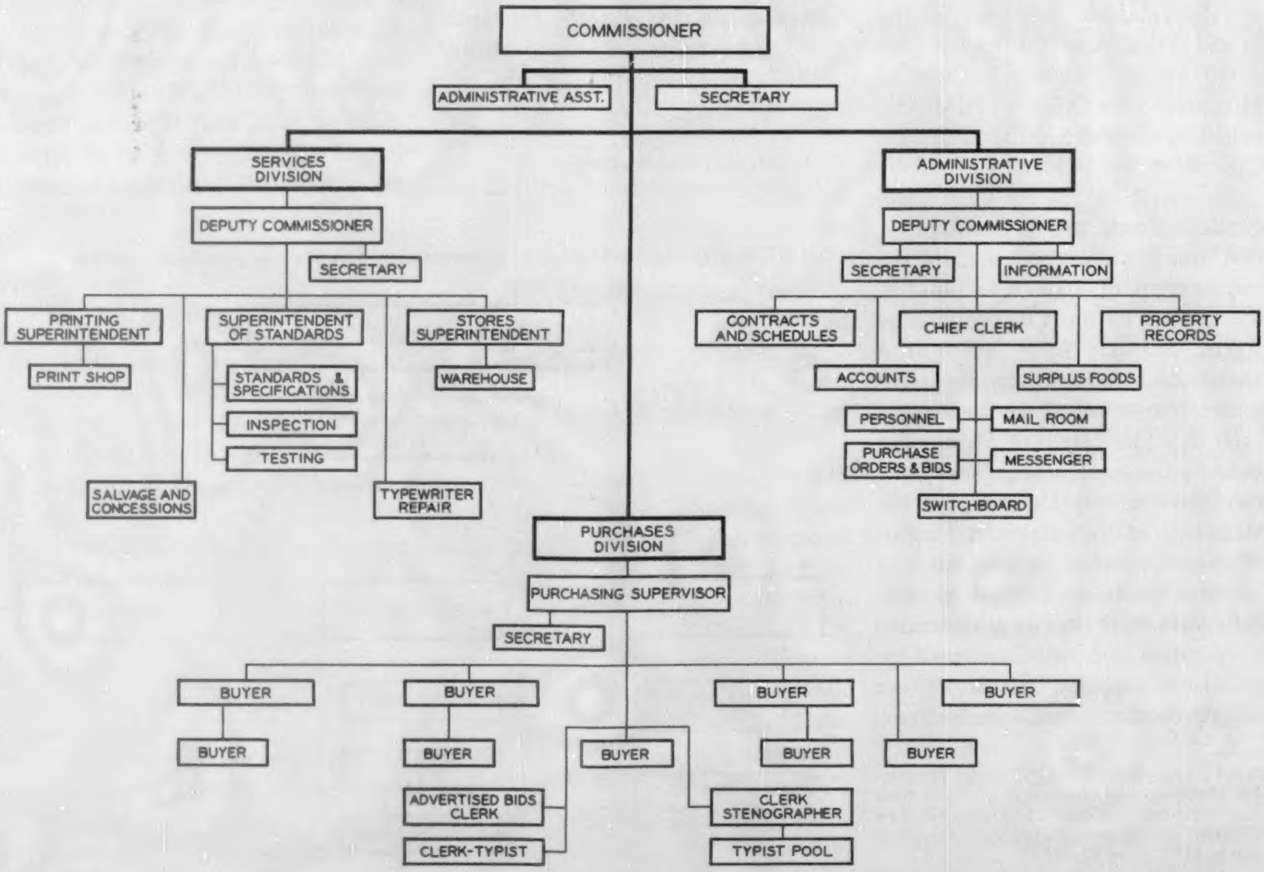
The Procurement Department is of the opinion that fresh fruits and vegetables should be checked only at the point of delivery, because of the very perishable nature of the commodity and also to avoid substitution after Federal inspection. The inspection of fresh fruits and vegetables and also canned goods is done on a spot check basis because of the cost involved. The city of Philadelphia has ten points of delivery which makes inspection more costly than in some other cities where delivery is to one or two points.

The USDA charges for its services on an hourly cost basis.

Testing Facilities

The main testing facilities used by the Standards Section are located in two places. The principal laboratory, "The City Hall laboratory," is operated by the Water Department and consists of a well-equipped chemical and physical testing unit suitable for the testing of practically all of the

The city of Philadelphia procurement department



Herbert S. Schenker
Superintendent of Standards

commodities purchased by the Procurement Department, except for foods, drugs, and biologicals. During 1954, this laboratory received some 560 test samples requiring detailed chemical analysis from the Procurement Department. In addition, various city agencies themselves submitted large numbers of samples. As a result, more than 1000 tests were performed by the laboratory on commodities purchased by the city of Philadelphia.

The small laboratory in the Standards Section is designed primarily for physical checking of textiles, paper products, and related commodities. This laboratory has received and handled some 1700 samples, most of which involved only simple spot tests designed primarily to determine acceptability of products in connection with bids.

In addition, the facilities of the Philadelphia General Hospital Laboratory are used occasionally. This laboratory does not make routine tests, as such, for the Procurement Department, but when necessary, it does check deliveries of hospital supplies, primarily those of a chemical and biological nature. These tests are made to determine whether the supplies meet hospital requirements.

The above illustrates how a city purchasing department is utilizing the facilities of other city departments or agencies.

Occasionally, services of recognized commercial testing laboratories are being used.

A request often made to the author by state and municipal purchasing officials is to list the most important laboratory equipment for the testing of commodities purchased by government units. Space does not permit us to give an all-inclusive list of such equipment. However, the series of photographs (pages 114-115) illustrating the testing equipment used by the Procurement Department of the city of Philadelphia may serve as a guide for other purchasing activities in the choice of equipment suitable for their local needs.

Benefits Derived by the City of Philadelphia

The benefits derived by the city of Philadelphia from the standards program established only a few years ago, and recognition that standardization is an essential tool of supply management, are well expressed by the Procurement Commissioner in his forthcoming 1954 Annual Report. He lists the benefits in part as follows:

"1. Having accurately described the commodity that is wanted, bidders are in a better position to bid intelligently and buyers to evaluate their offers. Usually the price gap between low and high bid is substantially narrowed.

"2. Inspection is facilitated since the inspection staff has a definite yardstick of comparison.

"3. In the so-called general use items, standard specifications result in a decrease in varieties and types purchased, enabling us to estimate requirements more accurately and to purchase on a schedule time basis rather than on an 'ad hoc' basis, also greatly reducing the paper work of individual requisitions and invitations to bid.

"4. Through cooperation with the warehouse activity, bulk buying and warehousing are facilitated.

"5. The general quality level of commodities purchased is adjusted more closely to the actual needs of the using departments.

"6. By and large the suppliers (particularly the reputable ones) are happier; some of the others complain, which in our opinion, attests to the value of the program.

"7. Most using departments likewise are happier; their requisitioning job has been simplified."

First Standard Issued in New Series on Transformers

The harassed user is being given a break in a new series of transformer standards now being completed. In previous editions he has had to refer from one standard to another to find all the requirements for a particular type of transformer or reactor. With publication of American Standard C57.13-1954, Requirements for Instrument Transformers, a new principle is put into effect which will be applied across the board to all transformer lines. All requirements for each product line are included in a single document. Cross references are eliminated.

The new edition on instrument transformers, for example, includes service conditions, classification of types, ratings, standard burdens, standard accuracy classes, standard application data, temperature ratings, short-circuit and open-circuit limitations, insulation classes and dielectric tests, and nameplate data.

Other standards in the transformer series, several of which are near completion, will cover: Power and distribution transformers; constant-current transformers of the moving coil type; step-voltage and induction-voltage regulators; current-limiting reactors; general purpose specialty transformers; and rectifier transformer equipment. Test codes formerly issued in separate documents are to be included, as applicable, in each standard.

A new ring binder, especially prepared for the series, is available.

Copies of American Standard Requirements for Instrument Transformers, C57.13-1954 ($2.50) and of the special binder for the transformer series ($2.00) can be obtained from the American Standards Association.

FROM OTHER COUNTRIES

Members of the American Standards Association may borrow from the ASA Library copies of any of the following standards recently received from other countries. Orders may also be sent to the country of origin through the ASA office. Titles are given here in English, but documents are in the language of the country from which they were received. An asterisk * indicates that the standard is available in English as well. For the convenience of readers, the standards are listed under their general UDC classifications. In ordering please refer to the number following the title.

001.8 GENERAL METHODOLOGY

Austria (ONA)

General rules for systematic subdivision of different parts of a manuscript — ONORMA 2720

362.11 HOSPITALS, INFIRMARIES

Norway (NSF)

4 standards for different equipment of hospital kitchen — NS 640;-644;-662/3

Folding screen, tubular — NS 685

Inventory list for a 25-bed general hospital — NS 697

389 METROLOGY. WEIGHT AND MEASURES. STANDARDIZATION

Portugal (IGPAI)

Preferred numbers — NP-28

Rumania (CSS)

Units of measurement used in mechanics — STAS 739

Units of measurement: specific weights — STAS 1295

Units of measurement: temperature, calory — STAS 1647

511 ARITHMETIC. THEORY OF NUMBERS

Portugal (IGPAI)

Rounding of numerical values — NP-37

526.8 CARTOGRAPHY

Norway (NSF)

4 standards for map symbols, designating water works, sewerage, railway, gas works, and harbors — NS 744/5;-747/8

543.1 LABORATORY EQUIPMENT

Rumania (CSS)

Laboratory glassware, general specifications — STAS 3450

543.3 WATER ANALYSIS

Poland (PKN)

4 standards for chemical analysis of waste water from gasworks — PN C-04575, PN C-04580/82

544.1 REAGENTS IN GENERAL

Czechoslovakia (CSN)

49 standards for different chemical reagents and indicators — Series CSN 684000 . . . -5000 . . . -6000 . . .

546 INORGANIC CHEMISTRY

USSR

Celluloid, commercial — GOST 428-53

546.217 AIR

Poland (PKN)

2 standards on air: chemical composition — PN C-08010/11

547 ORGANIC CHEMISTRY

United Kingdom (BSI)

Chlorobenzene — BS 2533:1954

Dibutyl sebacate — BS 2535:1954

Di-2-ethylhexyl sebacate — BS 2536:1954

USSR

Uric acid — GOST 6691-53

549 MINERALOGY

USSR

Talcum, ground, specifications of — GOST 6578-53

553 GEOLOGY AND MINERALOGY

Poland (PKN)

Bauxite, chemical analysis of — PN H-04131

614.8 PREVENTION OF ACCIDENTS. SAFETY MEASURES

Norway (NSF)

Safety warning colors — NS 814

Spain (UNE)

Protection goggles for foundrymen — UNE 43 160

614.84 FIRE BRIGADE

Belgium (IBN)

Firemen's safety belts — NBN 335

Rumania (CSS)

Firemen axe and hook — STAS 3243/4

Safety belt, Type B — STAS 3375

Fireman's ladders, classification — STAS 3477

Fire hydrants with nominal pressure 10 kgf/cm^2 — STAS 3479

615 PHARMACY. THERAPEUTICS

Czechoslovakia (CSN)

Procain-penicilin G — CSN 864610/1

Penicilin pastes and tablets — CSN 864613/5

615.47 MEDICAL INSTRUMENTS. NURSING APPLIANCES

Mexico (DGN)

Adhesive tape, surgical — DGN R 27

United Kingdom (BSI)

Inflatable rubber bed pans for hospital use — BS 2492:1954

Anti-static rubber footwear for use in hospitals — BS 2506:1954

Rubber aprons for hospital use — BS 2507:1954

Rubber-proofed bed sheeting for hospital use — BS 2508:1954

621.1 STEAM ENGINES. BOILERS

Rumania (CSS)

Boilers' dished heads, dimensions — STAS 3326

Boilers' economizer cast iron tubes — STAS 3458/9

Safety device for low pressure steamboilers — STAS 3614

621.13 RAILWAY STEAM LOCOMOTIVES

Germany (DNA)

Piston rings for locomotive engines — DIN 38240

Rumania (CSS)

3 standards for smoke pipes — STAS 1016/8

Safety valve of locomotive boiler — STAS 3425

Water feeding valve — STAS 3464

List of symbols, names, and designations of principal parts of locomotives — STAS 3588

621.3 ELECTRICAL ENGINEERING

Argentina (IRAM)

6 standards for power transformers — IRAM 2018;-2099;-2104/6;-2112

Domestic electrical appliances, safety minimum requirements for — IRAM 2092

Austria (ONA)

Steel-aluminum cables for overhead lines — ONORM E 4004/5

Ceramic insulators series VHD up to 35 kv — ONORM E 4101

Straight pins for insulators series VHD — ONORM 4151

Insulated steel sheathed conduits — ONORM E 6500

1- to 4-wire insulated conductors for tension up to 1000 V — ONORM E 6509

Canada (CSA)

Construction and test of electric fixtures — C22.2 No. 9-1954

Construction and test of flexible metallic conduit — C22.2 No. 56-1954

Specification for tolerable limits and special methods of measurement of radio interference from vehicles having internal combustion engines — C22.4 No. 104-1954

Tolerable limits and special methods of measurement of radio interference from electrical appliances and equipment — C22.4 No. 105-1954

Germany (DNA)

Different types of connection post for wires up to 4 sq. mm and 440 v — DIN 46271

2 types of fuses, 6 amp, 250 v, for telecommunication installation — DIN 41676;-41679

Poland (PKN)

Steel power cables for overhead lines — PN E-90006

Tee-types soldering joints for copper power cables — PN E-92812

High tension warning safety signs — PN E-08500

Cable grounding nut — PN E-92807

Multiple binding post boards for telecommunication installations — PN T-92303

3 types of cord shortening devices used in telecommunication — PN T-92304/6

6 standards for plugs, switches, etc, used in telecommunications — PN T 82124/27, PN T-82107/8

Anticorosive electroplating of different metals — PN H-97006

Spain (UNE)

Testing of copper braid used for flexible conductors — UNE 7044
Transformers for electric bells — UNE 20049

United Kingdom (BSI)

Polythene-insulated cables sheathed with P.V.C. for electric power and lighting up to 250 volts — BS 1557:1954
Composite units of switches and fuses for use in industrial systems and domestic circuits — BS 2510:1954

USSR

Liquid capacitors. Determination of dielectric losses at 50 cycles — GOST 6581-53
Blocks for stretching overhead lines — GOST 6660-53
Copper sleeves for joining overhead lines — GOST 6704-53
a-c installations up to nominal frequencies of 10000 cycles — GOST 6697-53

621.643 CONDUITS. PIPES AND ACCESSORY PARTS

Norway (NSF)

5 standards for heavy pipe unions and details — NS 580, B.1.1-5

Poland (PKN)

13 standards for flanged pipes and fittings — PN G-44015, PN G-44001/8, PN G-44010/13
Seamless steel pipes, threaded ends — PN H-74203
Seamless steel precision commercial pipes — PN H-74240;-243

United Kingdom (BSI)

Steel compression pipe fittings for engineering purposes — BS 2051: Part 3:1954

USSR

Pipes, bending test of — GOST 3728-47
Pipes, hydrostatic test of — GOST 3845-47

621.753 TOLERANCE. FITS. GAGES

Argentina (IRAM)

Gage limit indicator for inside and surface work — IRAM 5033
Workshop limit gage — IRAM 5035
Inspection limit gage — IRAM 5037

621.791 SOLDERING. WELDING. CUTTING

Austria (ONA)

Different grades of tin solder — ONORM M 3461

621.798 PACKING

Norway (NSF)

3/4 crate for fish — NS 449

621.82 SHAFTING. JOURNALS. BEARINGS. COUPLINGS

Spain (UNE)

Steel balls of diameters up to 76.2 mm (3 in.) Quality requirement and tolerances — UNE 18014
3 standards for different types of internal and external splines for automobiles — UNE 26092;-h.1;-h.3;-26093

621.83 GEARS. RACKS. CAMS. SLIDEBARS

Spain (UNE)

Type of rack teeth — UNE 18016

621.87 HOISTING MACHINERY

Czechoslovakia (CSN)

Bridge-cranes for coal supplying in power stations — CSN 267021

621.88 MEANS OF ATTACHMENT

Argentina (IRAM)

Carriage bolts with square neck, square, or hexagon nuts — IRAM 537
Bolts, nomenclature — IRAM 596

Austria (ONA)

Eye bolts, metric thread — ONORM M 5144

Czechoslovakia (CSN)

3 types of rivets — CSN 022350/1;-022360

Germany (DNA)

Metric taper thread, 1:16 taper — DIN 158.B1.1
Fully threaded hexagon-head screws, Whitworth thread — DIN 933.B1.3

Norway (NSF)

Round-head, fin-neck screws with hexagon nut, inch and metric size — NS 874
Oval slotted head screws and hexagon nuts — NS 878
Axle nut, right- and left-hand thread — NS 879

Poland (PKN)

4 standards for acme thread — PN M-02017/8, PN M 02021;-02023
4 standards for buttress thread — PN M-02019/20, PN M-02022;-02024

621.89 LUBRICATION

Czechoslovakia (CSN)

3 standards for automobile transmission lubricating oils — CSN 656640/2
9 standards for different tests of lubricating oils — CSN 657066;-7073/7; 7091/3

Germany (DNA)

Lubricating oil grade D — DIN 51504

621.9 MACHINE TOOLS

Germany (DNA)

50-degree angle milling cutter — DIN 842
Slotting cutter — DIN 1890
Diamond wire drawing dies — DIN 1546
Shell reamers — DIN 219
Nozzle for pneumatic hammers — DIN 8538

Poland (PKN)

2 standards for one point cutting tools — PN M-58672/3
2 types of carpenter's planes — PN D-54568/9

Spain (UNE)

3 types of hand saws — UNE 41033/5
Carpenter's hatchet — UNE 41036

622 MINING

Belgium (IBN)

Lighting system for coal mines — NBN 314

622.6 MINING TRANSPORT: HOISTING AND HAULAGE

Czechoslovakia (CSN)

9 standards for cable hoisting and hauling installation in mines. Structural details of sheaves. etc — CSN 273801;-3811;-3820/3;-3825/7

624 CIVIL ENGINEERING

Austria (ONA)

General rules for cement work — ONORM B 3302

Norway (NSF)

Wooden window frames, types and sizes — NS 757
Different types of wooden fillets for use inside buildings — NS 780
7 standards for different types of inside staircases — NS 780/3;-785/7

Poland (PKN)

Classification of wooden roof constructions — PN B-95130

625.1 RAILWAY CONSTRUCTION

Rumania (CSS)

Railway car brake shoes — STAS 109
Car suspension springs — STAS 3285
Journal box — STAS 3339
Leaf springs and buffer springs — STAS 3427

625.2 RAILWAY ROLLING STOCK

Argentina (IRAM)

Solid rolled steel wheels for railway rolling stock — IRAM 7001

Germany (DNA)

Brake shoes — DIN 5621
Lubricating oil and fuel sight glasses — DIN 5624

Poland (PKN)

3 standards for wheels and parts thereof — PN K-91030;-31;-33

Spain (UNE)

Railway car coupling link — UNE 25040
Pulleys for driving electric dynamos installed on railway passenger cars — UNE 25054
Toilet bowl for railway passenger cars — UNE 25062
Bumpers for standard Spanish railway cars — UNE 25064/5
Terminology of railroad rolling stock — UNE 25087

625.7 ROADS. ROAD BUILDING

Norway (NSF)

Snow plough attachment to bulldozers — NS 817

628 SANITARY TECHNOLOGY AND ENGINEERING

Poland (PKN)

Shovel for cleaning cable-sewers — PN T-55003

628.8 HEATING. VENTILATION. AIR-CONDITIONING

Netherlands (HCNN)

Central heating installations, safety regulations for — V 3028

628.9 ILLUMINATION TECHNIQUE

Austria (ONA)

Nomenclature, definition, and symbols of units used in illumination technique — ONORM O 1020

629.11 LAND VEHICLES. TRANSPORT ENGINEERING

Czechoslovakia (CSN)

11 standards for different sizes and different construction of automobile low pressure tire — CSN 631126;-1133;-1145/6;-1168;-1170;-1172;-1180;-1183/5

Germany (DNA)

Pneumatic brake hose clamps — DIN 74306
Trailer coupling bolts — DIN 74056

Mexico (DGN)

Steel springs for shock absorbers — DGN B 60

Recent Publications Received by ASA

National Electrical Manufacturers Association

155 East 44th Street
New York 17, N. Y.

Specifying a Direct-Connected Steam Turbine Synchronous Generator Unit (No. TU4.1-1954) 80 cents

This book covers purchase specifications for 60-cycle 3600 rpm and 50-cycle 3000 rpm direct-connected steam turbine synchronous generator units, rated 2000 to 10,000 kw, inclusive.

Specifying a Geared Steam Turbine Synchronous Generator Unit (No. TU2-1-1954) 80 cents

The information in this publication was prepared to assist purchasers in the preparation of purchase specifications for geared steam-turbine-driven synchronous units, rated 500 to 1500 kw, inclusive.

Standards Publication for Power Switching Equipment (No. SG6-1954) $2.75

This publication deals with such power switching equipment as air switches, interrupter switches, bus supports, insulators, accessories (operating mechanisms, switch hooks or sticks, interlocks, and auxiliary switches), and outdoor stations (structures, pole-top frames, etc). Instructions are given for the installation, operation, and care of such equipment.

Standards Publication for High-Voltage Fuses (No. SG2-1954) $2.50

This book contains information concerning the rating, testing, application, and manufacture of distribution cutouts, fuse links, power fuses, and current-limiting resistors. The terms used throughout the book are defined.

National Bureau of Standards
U.S. Dept. of Commerce

(*Copies may be purchased from the Superintendent of Documents, Government Printing Office, Washington 25, D.C.*)

Mechanical Failures of Metals in Service (Circular 550), by John A. Bennett and G. Willard Quick, 36 pages, 102 figures, 1 table. 30 cents.

At the request of other Government agencies such as the Civil Aeronautics Board, the Interstate Commerce Commission, and the Coast Guard, the National Bureau of Standards has undertaken the examination of metal parts that have failed in service for evidence bearing on the causes of these failures.

This circular describes 35 such cases representing the most frequently observed types of failure. The factors of design, fabrication, or use contributing to these failures are presented. The characteristics by which the various types of fractures can be recognized are discussed, and recommended precautions that should be observed to reduce mechanical failures of metals in service are included.

Standard Samples and Reference Standards Issued by the National Bureau of Standards (Circular 552), 23 pages. 25 cents

This circular contains a descriptive listing of the various Standard Samples issued by the National Bureau of Standards. A schedule of weights and fees, as well as directions for ordering, is included. Summarized tables of analyses are presented to indicate the type of standards of composition presently available. The current status of the various standards will be indicated by a mimeographed insert.

The NBS program on standard samples has been in existence almost since the organization of the Bureau. The first standards were prepared in 1905, and today over 500 different samples of chemicals, ores, ceramics, and metals are prepared, certified, and distributed by NBS. They are sent to analytical and research laboratories for use in controlling chemical processes and in maintaining the accuracy of apparatus and equipment. The standard samples are materials that have been carefully analyzed, or whose physical properties have been precisely determined at the Bureau and other laboratories.

Commodity Standards Division
Office of Technical Services
U.S. Department of Commerce

(*Copies may be purchased from the Superintendent of Documents, Government Printing Office, Washington 25, D.C.*)

Commercial Standard CS197-54, Dimensions and Tolerances for Flexible Standard Wall Polyethylene Pipe 5 cents

Established at the request of the Society of the Plastics Industry, this Commercial Standard establishes dimensions and tolerances for inside diameters and wall thicknesses of 10 nominal sizes of flexible polyethylene pipe ranging from one-half inch to six inches in diameter. It also establishes minimum weights in pounds per 100 feet of pipe. Methods of sampling and test procedure, as well as a recommended method of labeling pipe that is in accordance with the Commercial Standard, are included.

National Fire Protection Association

60 Batterymarch Street,
Boston 10, Mass.

A List of NFPA Publications. January 1955. No charge.

The publications issued by the National Fire Protection Association are listed as of the first of this year. The standards for fire protection are included, listed in the various forms in which they are published. The principal standards are grouped in the several volumes of the *National Fire Codes*. Most of them are also available in separate pamphlet form. The list includes a separate section on pocket editions of NFPA Standards; standards and committee reports; reference books; educational and miscellaneous pamphlets; current fire records and fire reports; bulletins and colored folders; and a selected list of NFPA aviation bulletins issued from 1951-1954.

AMERICAN STANDARDS

Status as of April 4, 1955

Acoustics

American Standard Published—

Free-Field Secondary Calibration of Microphones, Method for, Z24.11-1954 $0.50
Sponsor: Acoustical Society of America

Building

In Standards Board—

Building Code Requirements for Minimum Design Loads in Buildings and Other Structures, A58.1 (Revision of A58.1-1945)
Sponsor: National Bureau of Standards

Standard Submitted—

Standard Types of Building Construction, ASA A110; NFPA 220
Sponsor: National Fire Protection Association

Consumer Goods

American Standard Approved—

Sampling and Chemical Analysis of Alkaline Detergents, Method of, ASTM D501; ASA K60.21-1955 (Revision of ASTM D501-49; ASA K60.21-1950)
Sponsor: American Society for Testing Materials

In Standards Board—

Computing Food-storage Volume and Shelf Area of Automatic Household Refrigerators, Method of, B38.1 (Revision of B38.1-1944)
Sponsors: American Society of Refrigerating Engineers; U.S. Department of Agriculture, Home Economics Research Branch.

Electrical

American Standards Published—

Measurement of Aspect Ratio and Geometric Distortion of Television Cameras and Picture Monitors, Methods of, ASA, C16.23-1954; 54 IRE 23.S1 $0.60
Sponsor: Institute of Radio Engineers

Covers procedure for the measurement of the characteristics listed in the title and also includes definitions, apparatus and circuits, practical measuring devices, and the requirements and characteristics of measuring equipment.

Measurement of Interference Output of Television Receivers in the Range of 300 to 10,000 KC, ASA C16.25-1955; 54 IRE 17.S1 $0.60
Sponsor: Institute of Radio Engineers

Covers method of measurement, equipment required, setup details, calibration of setup and general information on sources and modes of interference.

Schedules of Preferred Ratings for Power Circuit Breakers, C37.6-1955 (Revision of C37.6-1953) $0.40
Sponsor: Electrical Standards Board

Lists preferred ratings for indoor oil, indoor oilless, and outdoor power circuit breakers. In this edition Note 7 of Table 3 on Outdoor Power Circuit Breakers was changed to omit requirements concerning lightning arresters.

Switchgear Assemblies and Metal-Enclosed Bus, C37.20-1955; AIEE No. 27 $0.60
Sponsor: Electrical Standards Board

Contains specifications for service conditions, ratings, heating and dielectric tests. Also includes definitions.

Polyphase Induction Motors and Generators, Test Code for, C50.20-1954 $0.80
Sponsor: Electrical Standards Board

Instructions for conducting and reporting the more generally applicable and acceptable tests for determining the performance characteristics of polyphase induction motors and generators. Contains information concerning tests in general, electrical measurements, and methods of determining performance by means of brake, dynamometer, duplicate machine, input measurements, or equivalent circuit calculations. Temperature tests and miscellaneous requirements are also described.

Gas-Filled Radiation Counter Tubes, Methods of Testing, ASA C60.11-1954; 52 IRE 7.S2 $0.75

Includes requirements for determination and measurement of counting-rate, multiple counts, Geiger-Mueller threshhold, sensitive volume, temperature dependence, life test, pulse measurements, hysteresis of counter tubes, over-all efficiency, photoelectric effect, gas amplification of a proportional counter tube, electrical leakage, and induced radioactivity. Also includes general discussion of radiation sources, statistics of counting, and counter tube output circuits.

Measuring Noise in Electron Devices, Methods of, ASA C60.13-1954; 53 IRE 7.S1 $0.75
Sponsor: Joint Electron Tube Engineering Council

The CW-Signal Generator Method, the Dispersed-Signal Source Method and the Comparison Method of noise factor measurements are covered. Measurement of average noise factor, spot-noise factor, and networks in cascade are also included. General information on noise measurement and noise factor measurement is also given.

In Board of Review—

Asbestos, Asbestos - Varnished Cloth and Asbestos-Thermoplastic Insulated Wires and Cables, C8.36; NEMA WC1-1955
Sponsor: Electrical Standards Board

In Standards Board—

Terms for Audio Techniques, Definitions of, ASA C16.24; 54 IRE 3.S1
Sponsor: Institute of Radio Engineers

Wet Process Porcelain Insulators, Suspension Type (EEI TDJ-52; NEMA 140-1952), C29.2

Wet Process Porcelain Insulators, Spool Type (EEI TDJ-53; NEMA 141-1952), C29.3

Wet Process Porcelain Insulators, Strain Type (EEI TDJ-54; NEMA 142-1952) C29.4

Wet Process Porcelain Insulators, Low-and Medium-Voltage Pin Type (EEI TDJ-55; NEMA 143-1952), C29.5

Wet Process Porcelain Insulators, High-Voltage Pin Type (EEI TDJ-56; NEMA 144-1952) C29.6

Wet Process Porcelain Insulators, High-Voltage Line-Post Type (EEI TDJ-57; NEMA 145-1952), C29.7
Sponsor: Electrical Standards Board

Terms of Electron Tubes, Definitions of, C60.9

Terms of Magnetrons, Definitions of, C60.10

Terms of Gas Filled Radiation Counter Tubes, Definitions of, C60.12
Sponsor: Joint Electron Tube Engineering Council

Project Initiated—

Terminology for Automatic Controls, C85
Sponsor: American Society of Mechanical Engineers

Materials and Testing

American Standards Published—

Asphalt-Saturated Roofing Felt for Use in Waterproofing and in Constructing Built-Up Roofs, Specifications for, ASTM D226-47; ASA A109.2-1955 $0.30

Character of felt and saturant, and physical properties of 15-pound and 30-pound, 36-inch or 32-inch wide asphalt-saturated roofing felt for use in the membrane system of waterproofing and in the construction of built-up roofs.

Coal-Tar Saturated Roofing Felt for Use in Waterproofing and in Constructing Built-Up Roofs, Specifications for, ASTM D227-47; ASA A109.3-1955 $0.30

Character of felt and saturant, and physical properties of 36-inch or 32-inch wide coal-tar saturated roofing felt for use in the membrane system of waterproofing and in the construction of built-up roofs.

Asphalt-Saturated Asbestos Felts for Use in Waterproofing and in Constructing Built-Up Roofs, Specifications for, ASTM D250-47; ASA A109.4-1955 $0.30

Character of felt and saturant, and physical properties of 15-pound and 30-pound,

36-inch or 32-inch wide asphalt-saturated asbestos felt for use in the membrane system of waterproofing and in the construction of built-up roofs.

Asphalt-Saturated and Coated Asbestos Felts for Use in Constructing Built-Up Roofs, Specifications for, ASTM D655-47; ASA A109-5-1955 $0.30

Character of felt and saturant and physical properties of 20-pound and 50-pound, 36-inch or 32-inch wide, asphalt-saturated and asphalt-coated asbestos felt for use in the construction of built-up roofs.

Coal-Tar Pitch for Roofing, Dampproofing, and Waterproofing, Specifications for, ASTM D450-41; ASA A109.6-1955 $0.30

Physical and chemical properties of the two types of coal-tar pitch for use as a mopping coat in the construction of built-up roofs surfaced with slag or gravel, as a mopping coat in dampproofing, or as a plying or mopping cement in the construction of a membrane system of waterproofing.

Coal-Tar Pitch for Steep Built-Up Roofs, Specifications for, ASTM D654-49; ASA A109.7-1955 $0.30

Physical and chemical properties of coal-tar pitch for use as a mopping coat and for embedding slag or gravel in the construction of steep built-up roofs with inclines of 1 to 6 inches per horizontal foot, where nailing is employed. Pitch also suitable for embedding and coating the top ply of felt on flat built-up promenade roofs to be surfaced with quarry tile or other rigid or semirigid wearing surfaces.

Test for Sieve Analysis of Granular Mineral Surfacing for Asphalt Roofing and Shingles, Method of, ASTM D451-40; ASA A109.8-1955 $0.30

Sieve specifications and method of sieve analysis of granular mineral materials such as crushed slate, stone, etc, for use on the weather surface of prepared asphalt roofing and shingles.

Test for Sieve Analysis of Nongranular Mineral Surfacing for Asphalt Roofing and Shingles, Method of, ASTM D452-40; ASA A109.9-1955 $0.30

Sieve specifications and method of sieve analysis of nongranular mineral materials such as mica, talc, and other powdered or flaky mineral particles for use on the weather surfaces of prepared asphalt roofing and on the non-weather-exposed surface of asphalt shingles.

Sampling and Testing Felted and Woven Fabrics Saturated with Bituminous Substances for Use in Waterproofing and Roofing, Methods of, ASTM D146-47; ASA A109.10-1955 $0.30

Sampling, and dimensional, weight, moisture, strength, pliability, water absorption, loss on heating, and desaturated fabric tests for felted or woven fabrics saturated with asphalt or coal-tar for use in the membrane system of waterproofing and the construction of built-up roof coverings.

Woven Cotton Fabrics Saturated with Bituminous Substances for Use in Waterproofing, Specifications for, ASTM D173-44; ASA A109.12-1955 $0.30

Character and physical properties of woven cotton cloth waterproofed with either asphalt or coal-tar pitch for use in the membrane system of waterproofing.

Copper and Copper-Base Alloy Forging Rod, Bar, and Shapes, Specifications for, ASTM B124-54; ASA H7.1-1954 (Revision of ASTM B124-52; ASA H7.1-1953, 2nd ed) $0.30

Chemical composition of twelve copper and copper-base alloys for rods, bars, and shapes capable of being readily forged hot.

Seamless Copper Water Tube, Specification for, ASTM B88-54; ASA H23.1-1954 (Revision of ASTM B88-51; ASA H23.1-1953) $0.30

Material treatment, composition, grain size, and tensile strength; expansion and hydrostatic tests; and reference to dimensions, weight, and tolerance specifications for seamless copper tube especially designed for plumbing purposes, underground water service, drainage, etc, but suitable for water heaters, fuel oil lines, gas lines, etc.

Seamless Copper Pipe, Standard Sizes, Specification for, ASTM B42-54; ASA H26.1-1954 (Revision of ASTM B42-52; ASA H26.1-1953, 2nd ed) $0.30

Composition, temper, bending, expansion, and hydrostatic pressure requirements for regular and extra-strong seamless copper pipe in standard pipe sizes for use in plumbing, boiler feed lines, and similar purposes.

Red Brass Pipe, Standard Sizes, Specifications for, ASTM B43-54; ASA H27.1-1954 (Revision of ASTM B43-52; ASA H27.1-1953, 2nd ed) $0.30

Composition, temper, bending, expansion, cracking, and hydrostatic pressure requirements for regular and extra-strong seamless red brass pipe in standard pipe sizes for use in plumbing, boiler feed lines, and similar purposes.

Rolled Copper-Alloy Bearing and Expansion Plates and Sheets for Bridge and Other Structural Uses, Specifications for, ASTM B100-54; ASA H31.1-1954 (Revision of ASTM B100-52; ASA H31.1-1953) $0.30

Composition, physical properties, test references, dimensional tolerances, and finish for a phosphor bronze alloy and a copper-silicon alloy for use as fixed or expansion bearings where motion is slow and intermittent and pressure does not exceed 3000 psi.

Leaded Red Brass (Hardware Bronze) Rod, Bar, and Shapes, Specifications for, ASTM B140-54; ASA H33.1-1954 (Revision of ASTM B140-52; ASA H33.1-1953, 2nd ed) $0.30

Chemical composition and tensile properties of two types of leaded red brass for rods, bars, and shapes suitable for screw machine work.

Sponsor: American Society for Testing Materials

Mechanical

American Standards Approved—

Ring-Joint Gaskets and Grooves for Steel Pipe Flanges, B16.20-1955 (Revision of B16.20-1952)

Sponsors: American Society of Mechanical Engineers; Heating, Piping, and Air Conditioning Contractors Association; Manufacturers Standardization Society of the Valve and Fittings Industry

Gas Transmission and Distribution Piping Systems, B31.1.8-1955 (Revision of B31.1.8-1952)

Sponsor: American Society of Mechanical Engineers

In Board of Review—

Square and Hexagon Bolts and Nuts, B18.2 (Revision of B18.2-1952)

Sponsors: American Society of Mechanical Engineers; Society of Automotive Engineers

In Standards Board—

Deep Well Vertical Turbine Pumps, Specifications for, B58.1

Sponsor: American Water Works Association

Mining

In Standards Board—

Quarry Safety Code, M28.1

Sponsor: National Safety Council

Standard Submitted—

Recommended Practice for Drainage of Coal Mines, M6 (Revision of M6-1931)

Sponsor: American Mining Congress

Office Equipment

American Standards Published—

Reflectances of Furniture for General Office Use, X2.1.3-1954 $0.25

Definition of Posture Chair, X2.1.4-1954 $0.25

Non-Carbonized, Single Ply, Adding Machine Paper Rolls, Specifications for, X2.4.2-1954 $0.25

Operating Voltage Range of Office Dictating Equipment, X2.5.16-1954 $0.25

Maximum Electrical Leakage of Dictating Machines, X2.5.17-1954 $0.25

Template and Method of Attaching Dictating Machine Secretarial Hand Controls to Typewriters, X2.5.18-1954 $0.25

Length of Cables for Office Dictation Machines, X2.5.19-1954 $0.25

Sponsor: National Office Management Association

Petroleum Products and Lubricants

In Board of Review—

Test for Distillation of Gasoline, Naphtha, Kerosine, and Similar Petroleum Products, Method of, ASTM D86-54; ASA Z11.10 (Revision of ASTM D86-53; ASA Z11.10-1953)

Test for Distillation of Natural Gasoline, Method of, ASTM D216-54; ASA Z11.11 (Revision of ASTM D216-53; ASA Z11.11-1953)

Test for Distillation of Gas Oil and Similar Distillate Fuel Oils, Method of,

ASTM D158-54; ASA Z11.26 (Revision of ASTM D158-53; ASA Z11.26-1953)

Test for API Gravity of Petroleum and Its Products, Method of (Hydrometer Method), ASTM D287-54; ASA Z11.31 (Revision of ASTM D287-52; ASA Z11.31-1952)

Test for Distillation of Crude Petroleum, Method of, ASTM D285-54T; ASA Z11.32 (Revision of ASTM D285-52; ASA Z11.32-1952)

Test for Neutralization Value (Acid and Base Numbers) by Potentiometric Titration, Method of, ASTM D664-54; ASA Z11.59 (Revision of ASTM D664-52; ASA Z11.59-1952)

Test for Saponification Number of Petroleum Products by Potentiometric Titration, Method of, ASTM D939-54; ASA Z11.67 (Revision of ASTM D939-52; ASA Z11.67-1952)

Test for Specific Gravity of Petroleum and Its Products (Hydrometer Method), Method of, ASTM D1298-54; ASA Z11.84

Sponsor: American Society for Testing Materials

Photography

American Standard Published—

Photographic Exposure Computer, PH2.7-1955 (Revision of Z38.2.2-1949) $1.50

Sponsor: Photographic Standards Board

Provides a practical method for determining the camera exposure of black-and-white and color films any place in the world by means of a scene index and light index given in tabular form. When the calculator contained in the standard is used with the scene and light indexes and exposure indexes, which for films of American manufacture are given in the Appendix, the shutter times and lens openings for actual camera exposure are obtained.

In Board of Review—

16mm Sound-Focusing Test Film, PH22.42 (Revision of Z22.42-1946)

16mm 400-Cycle Signal-Level Test Film, PH22.45 (Revision of Z22.45-1946)

16mm Buzz-Track Film, PH22.57 (Revision of Z22.57-1947)

16mm Motion-Picture Projector for Use With Monochrome Television Film Chains Operating on Full Storage Basis, PH22.91

35mm Magnetic Azimuth Alignment Test Film, PH22.99

Sponsor: Society of Motion Picture and Television Engineers

In Standards Board—

Dimensions for 70mm Perforated Film for Cameras Other than Motion Picture Cameras, PH1.20

Focal Length of Lenses: Markings, PH3.13, (Revision of Z38.4.4-1942)

Photographic Grade Hydroquinone, Specification for, PH4.126 (Revision of Z38.8.126-1949)

Photographic Grade Potassium Bromide, Specification for, PH4.200 (Revision of Z38.8.200-1949)

Photographic Grade Benzotriazole, Specification for, PH4.204 (Revision of Z38.8.204-1948)

Sponsor: Photographic Standards Board

Safety

American Standard Published—

Specifications to Minimize Hazards to Children from Residual Surface Coating Materials, Z66.1-1955 $0.35

Sponsor: American Academy of Pediatrics

Limits from a health standpoint for lead, antimony, arsenic, cadmium, mercury, selenium, and barium in liquid coating materials (such as paints, enamels, and lacquers) for use on articles such as furniture or toys or for interior use in buildings where it might be chewed by children.

American Standards Approved—

Safety Code for Industrial Power Trucks, B56.1-1955 (Revision of B56.1-1950)

Sponsor: American Society of Mechanical Engineers

Sanitation in Places of Employment, Minimum Requirements for, Z4.1-1955 (Revision of Z4.1-1935)

Sponsor: Public Health Service

In Standards Board—

Prevention of Dust Explosions in Flour and Feed Mills, Code for, Z12.3

Prevention of Dust Explosions in Terminal Grain Elevators, Code for, Z12.4

Prevention of Dust Ignitions in Country Grain Elevators, Code for, Z12.13

Sponsor: National Fire Protection Association

Standard Submitted—

Safety Code for Elevators, Dumbwaiters, and Escalators, A17.1 (Revision of A17.1-1937)

Sponsors: American Institute of Architects; National Bureau of Standards; American Society of Mechanical Engineers

WHAT'S NEW ON AMERICAN STANDARD PROJECTS

Scheme for the Identification of Piping Systems, A13—

Sponsors: American Society of Mechanical Engineers; National Safety Council

The committee has already reached substantial agreement on a revision of the 1928 edition of the American Standard Scheme for the Identification of Piping Systems. Work is still going on, however, on a revision of the appendices.

Safety Code for Walkway Surfaces, A22—

Sponsors: American Institute of Architects; American Society of Safety Engineers.

Further information is needed on the slipperiness characteristics of floor surfaces and methods of measuring slipperiness. This project will remain dormant until this information is available.

Protective Lighting for Industrial Properties, A85—

Sponsor: Illuminating Engineering Society.

The committee expects to complete work on a proposed standard and send it to letter ballot for vote by the entire committee within the next couple of months.

Small Tools and Machine Tool Elements, B5—

Sponsors: Metal Cutting Tool Institute; National Machine Tool Builders' Association; Society of Automotive Engineers; The American Society of Mechanical Engineers.

George F. Habach, Executive Engineer, Harrison Works, Worthington Corporation, and chairman of the Harrison Works Standards Committee, has taken office as chairman of Sectional Committee B5. He succeeds P. L. Houser, now Executive Secretary of the Metal Cutting Tool Institute.

Mr Habach graduated from Stevens Institute of Technology in 1929 and received a Masters Degree in Mechanical Engineering from the Polytechnic Institute of Brooklyn in 1936.

Mr Habach has been with the Worthington Corporation since 1929,

where he started as designer in the engineering department. He specialized on centrifugal pumps as application engineer, product engineer, and chief engineer of the centrifugal engineering division. Since 1951 he has been executive engineer of the Harrison Works.

His association with ASA activities started in 1939 as a member of Sectional Committee Y1. He has worked on Committee M6, Drainage of Coal Mines; Y32, graphical symbols and designations; Y10 letter symbols; and B54, numbering systems for anti-friction bearings.

George F. Habach

In addition to his work at Worthington he has taught at the Polytechnic Institute of Brooklyn evening school as Adjunct Professor in the Mechanical Engineering Department from 1941 to 1951.

Mr Habach is a member of the American Society of Mechanical Engineers; the Standards Engineers Society, and the National Society of Professional Engineers.

Pallets, B69—

Sponsors: Society of Industrial Packaging and Materials Handling Engineers; American Society of Mechanical Engineers.

J. E. Wiltrakis, Western Electric Company, New York, has been given responsibility for establishing five subcommittees on definitions, surveys, materials, testing, and sizes. He is chairman of the Technical Committee of B69.

F. H. Wiley, International Harvester Company, Chicago, is chairman of Sectional Committee B69; V. J. Reade, Whitehead Metal Products Company, Inc, New York, is vice-chairman; and C. J. Carney, Jr, Managing Director of the Society of Industrial Packaging and Materials Handling Engineers, is committee secretary.

Acoustics, Vibration, and Mechanical Shock, Z24—

Sponsor: Acoustical Society of America.

Final consideration is being given to a proposed American Standard Specification for Ultrasonic Therapeutic Equipment, Z24.18. It is hoped that this proposed standard will be given final approval by the sectional committee so it can be submitted for approval as American Standard within the next two months.

A new section on underwater acoustical terminology is being completed as a partial revision and supplement to American Standard Acoustical Terminology, Z24.1-1951.

An exploratory group is studying the possibility of including transistor hearing aids and bone conduction hearing aids in a revised edition of American Standard Method for Measurement of Characteristics of Hearing Aids, Z24.14-1953. The group is being asked to report at the next meeting of the committee, scheduled for June.

Because the writing group working on testing of bells has run into a number of problems peculiar to electronic carillons, a new exploratory group on this type of carillons has been set up.

Comments on a proposed standard measurement of transmission through building structures are being studied, with the most important

COMPANY MEMBER CONFERENCE

Spring Meeting—Milwaukee, Wisconsin, May 16-17

Headquarters: Plankinton Hotel

Preliminary Program

Monday, May 16

Morning	Engineering design tolerances and statistical quality control. Professor Irving W. Barr, Purdue University.
	Decimal Dimensioning. C. M. Wright, Chrysler Corporation.
	Discussion from the floor.
	Business meeting.
Afternoon	ASA and How It Helps Its Company Members. Vice Admiral G. F. Hussey, Jr (USN, Ret), Managing Director, American Standards Association.
	Standards in Relation to Use of Lubricants.
	Standards in Relation to Protective Coatings—Paints, Varnishes, etc.
Evening	Plant tour—Miller Brewing Company

Tuesday, May 17

Morning	Techniques of Company Standards. Speakers and discussion from the floor.
Afternoon	Plant tours to be announced

Anyone interested in company standardization in the Midwest area is welcome to attend this Spring Meeting of the Company Member Conference. Registration fee is $2.00. For a detailed program and attendance slip, write Henry Lamb, Secretary, Company Member Conference, Care of American Standards Association, 70 East 45 Street, New York 17, N.Y.

comments centering on the specification of filters and the choice of measuring frequencies in the measurements.

Work has been going forward on a number of standards for shock-testing machines. The Proposed American Standard Specification for Class HI (High-Impact) Shock Testing Machine for Lightweight Equipment, Z24.17, has been circulated to the sectional committee for comment. Progress is being made toward completing work on standardizing the variable-duration shock-testing machine. A writing group has started work on a shock-testing machine for electronic components.

The schedule of work on pickups for measurement of shock and vibration calls for a draft standard to be submitted to the sectional committee in June of this year.

Several drafts of a revised edition of the 1944 standard on sound level meters and their calibration have been gone over by the writing group. The group expects to have a proposed standard ready for vote by Sectional Committee Z24 at its meeting in June.

Informal meetings were held in Philadelphia last September by the writing group on loudspeaker testing with members of the British, French, German, Italian, Swedish, and Swiss delegations to Technical Committee 29 of the International Electrotechnical Commission. The group is preparing a report for consideration by sectional committee Z24 to present the USA viewpoint on loudspeaker testing to the IEC technical committee.

Work on testing of acoustic properties of ear protectors is substantially completed, the group reports.

An exploratory subcommittee on reference levels for audiometers is in touch with work going on at the National Bureau of Standards which is planning to study the artificial ear, and with a survey carried out by the Subcommittee on Noise in Industry at the Wisconsin State Fair last August. Thirty-six hundred individuals were tested under ideal testing conditions. Results of the survey are being punched on cards for study on IBM machines.

STANDARDS OUTLOOK

by LEO B. MOORE

TIME-ITIS REVEALED

One day in the midst of a conference with a group of standards engineers, one man posed a fundamental question by asking—How can we ever do all the things you expect of us, when we hardly have time now to do the things we must do? And that provided an opportunity to discuss a deep-seated problem for most people—the problem of time.

I have met many a standards engineer who has fallen prey to the sinister evil of being too busy to be effective—as effective as he should be. It is a disease that plagues many in the industrial world, particularly on the administrative level. Like a disease, it has its symptoms; like a disease, it is easier to acquire than to cure. I call it—time-itis.

This disease doesn't strike in the middle of the night. It is more insidious; it develops and thrives with each passing day until its presence can no longer be denied. The man with time-itis has "busy-ness" all about him. The phone rings endlessly. The office is constantly filled with people. Lunch is a quick sandwich and coffee. Reading material on current developments is laid aside. Promises are liberally broken and reluctantly mended. Conferences are called off. Meetings are disturbed. The secretary works late.

Probably no one will admit to experiencing all of these symptoms at once, but I will wager that we know someone who does.

The tragic part of the situation is the consequences to the individual himself. The damage to the smooth workings of the company can usually be repaired, but the individual suffers a variety of bad effects that may run very deep. To the person caught up in this web of time-itis the obvious solution of his ills is to get busier. Skip lunch. Stay later. Come to work earlier. Have a cigarette for breakfast. Rush for the bus. Get a brief case. Take the problems home. Defy the family. Just keep busy.

Now, all of us have occasional cases of time-itis and for us these extreme measures serve temporarily as cures. It is perfectly sensible to expect that our enthusiasm or ambition may overcome our better judgment as to what we can do and when. It is also reasonable to expect that a combination of circumstances may force us into time-itis. This happens to all of us.

But to the man embedded in time-itis as an habitual way of life, his busy gyrations can and do serve only to aggravate the disease further. He never relaxes. He can't sleep. He doesn't relish his meals. He is always tired. He doesn't enjoy himself. He is frustrated and discontented. He is not running his job; his job is running him.

We can only be thankful that there is a way out. Next month, we will consider what can be done to avoid time-itis.

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Mr Moore is Assistant Professor of Industrial Management at Massachusetts Institute of Technology where he teaches a full-term course in industrial standardization.